PUBLISHED UNDER THE SUPERINTENDENCE OF THE SOCIETY FOR THE DIFFUSION OF USEFUL KNOWLEDGE.

THE

Companion to the Almanac;

OR

YEAR-BOOK

OF

GENERAL INFORMATION;

FOR

1830.

CONTAINING,

INFORMATION CONNECTED WITH THE CALENDAR,

AND EXPLANATIONS OF

The Celestial Changes,

AND THE

NATURAL PHENOMENA OF THE YEAR.

GENERAL INFORMATION ON SUBJECTS OF

CHRONOLOGY, GEOGRAPHY, STATISTICS, *&c.*

Charitable and Literary Institutions.

THE LEGISLATION, STATISTICS, PUBLIC IMPROVEMENTS, AND CHRONICLE OF 1829.

LONDON:

CHARLES KNIGHT, PALL-MALL EAST.

PRICE TWO SHILLINGS AND SIXPENCE.

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ERRATUM IN THE BRITISH ALMANAC.

The SUSSEX SESSIONS in the British Almanac for 1830 are incorrectly given. They should stand as follows:—

SUSSEX SESSIONS, 1830,

Western Division,

Petworth, January 12, April 20; *Horsham*, July 13; *Chichester*, October 19.

Eastern Division,

Lewes, January 15, April 23, July 16, Oct. 22.

COMPANION TO THE ALMANAC.

PART I.

INFORMATION CONNECTED WITH THE CALENDAR, THE CELESTIAL CHANGES, AND THE NATURAL PHENOMENA OF THE YEAR.

I.—THE ERAS OF ANCIENT AND MODERN TIMES, AND OF VARIOUS COUNTRIES, EXPLAINED;

With a view to the comparison of their respective dates.

In the earliest stages of society, some division of time must have been necessary, and some means devised by men in the most savage state, to communicate to each other the period of undertaking, in concert, a hunt or a predatory excursion. But in such a condition the views of men do not extend far, and very limited periods would therefore suffice. The division of day and night, and the scarcely less obvious distinction of new and full moon, might have served to mark the lapse of time for ages; and, although in all climates the alternations of summer and winter, and of wet and dry periods, must have obtruded themselves on the feelings of the most unobserving, it was probably not until the practice of agriculture had afforded men leisure for reflection, that any accurate observations were made on the duration of the seasons, or means used to ascertain the periods of their return. We see, at the present time, that many societies of men, who live only by hunting and fishing, have no exact knowledge of duration of time beyond that of a moon or season, and designate a term of five or of fifty years, equally as a long time. All agricultural nations are aware of the return of the same seasons after a lapse of twelve or thirteen moons; but many years must have elapsed before the length of a solar year was accurately determined. Less civilized nations still continue to compute their time in part by the motions of the moon; and this was the mode of the Greeks, and of the Romans until the correction of Julius Cæsar, but the subject was so little understood even in his time, that an error of several days crept into the Roman calendar soon afterwards, requiring another reformation.

It will render the comparison of eras much easier, if we give some account of what is meant by a solar and a lunar year. A solar year is that space of time during which all the seasons have their course. This takes place in 365 days, 5 hours, 48 minutes, and 49 seconds; and an approximation to that time has been

adopted by those nations which have had sufficient astronomical science to determine it. But as it would be impracticable to begin every new year at a different hour of the day, which would be necessary if the perfect year should always be completed before the commencement of a new one, 365 days have been taken as the length of a year, leaving the odd hours and minutes to accumulate until they amount to a whole day, when they are added to the year, making what is called a leap year, or intercalary year, of 366 days. The various ways of doing this will be detailed when we speak of the different eras. Some nations still use a year of 365 days without any intercalation; and this is called a *vague*, or erratic year, because its commencement varies through all the different seasons.

A lunar year consists of 12 moons, or 354 days. This may be convenient enough for short periods, but is so ill adapted for the computation of a civilized nation, that none but Mahometans have continued in the use of it even for a little time. It suits the course of time so ill, that its commencement varies, in a few years, through all the seasons; and many men, amongst the nations which use it, can remember the fasts and festivals altering from summer to winter, and again from winter to summer, and their seed-time and harvest alternately wandering from the beginning of the year to the end.

The luni-solar year is that in which the months are regulated according to the course of the moon, but to which from time to time a month is added, whenever the year would range too widely from its original situation. This year is inconvenient from its varying duration; but as, in a long course of years, the months remain nearly at the same situation, it is less objectionable than the pure lunar year. It was the mode of computation of the Greeks and Romans, and is even now that of the Chinese, Tartars, Japanese, and Jews.

All these varying modes render the comparison of dates much more difficult than it appears to be at the first view. We shall endeavour so far to simplify the calculation as to enable any arithmetician to compute, within a day or two, the eras of every nation, and to reduce them to the Christian era.*

The Roman Year.

The Roman year, in its arrangement and division, is that on which our year is entirely founded. The Romans reckoned their time from the date which some of their antiquaries chose to assign for the founding of Rome, viz. the 21st of April, in the 2nd year of the 6th Olympiad, or 754 B.C. This era is designated by the letters A.U.C., or *ab urbe condita*, "from the building of the city." The first year used by them, and attributed to Romulus, consisted of ten months, from March to December, or 304 days. A year

* "The Calendar, and its successive Reforms," was explained in a short paper in the Companion for 1828. Some parts of the information there given are necessarily repeated in this article, which is intended to be as complete and practical as the subject will allow.

exhibiting such a discrepancy from the real course of the seasons could not have remained long in use, and it is supposed that extraordinary months were added as often as it was found necessary. A correction is attributed to his successor Numa, who is said to have added two months to the year, January at the beginning, and February at the end. All these months consisted of 29 or 31 days. The year was lunar, and consequently shorter than the true year; several additions were therefore made, which brought the beginning of the year nearly to the same season, *viz.* the middle of winter. February subsequently became the second month, which change is alluded to by Ovid.

This computation was followed, with some variation, arising partly from ignorance, and partly from the intrigues of the priests, who had the direction of the calendar, until the time of Julius Cæsar, who, observing that the beginning of the year, instead of occurring in winter, as at first, had now receded to the autumn, ordered that the year A.U.C. 707, or 47 B.C., should consist of 445 days, whereby the following year might begin at the proper time. In order to avoid, in future, the confusion naturally attendant on years of such varied length as those hitherto in use, he determined that the year should be solar, without any reference to the lunar motions. Supposing the natural year to consist of 365 days and 6 hours, he ordered that three years in succession should each consist of 365 days, and the fourth should contain 366 days. He also allotted the respective number of days to each month, precisely as we use to this day. With the exception of July and August, (then called Quintilis and Sextilis, but altered to their present names in honour of Julius and Augustus Cæsar,) the names also of the Roman months were similar to ours. The only difference between their calendar and ours was in their mode of counting days, which was backwards instead of forwards. To spare a long explanation, which perhaps might not be sufficiently intelligible to all readers, we shall set down a Roman month, with the days, according to our mode, opposite to each Roman day.

English.	*Roman.*	*English.*	*Roman.*
Jan. 1	Calends.	Jan. 17	16th bef. Cal. of Feb.
2	4th before nones.	18	15th ditto.
3	3d before nones.	19	14th ditto.
4	day before nones.	20	13th ditto.
5	Nones.	21	12th ditto.
6	8th before Ides.	22	11th ditto.
7	7th ditto.	23	10th ditto.
8	6th ditto.	24	9th ditto.
9	5th ditto.	25	8th ditto.
10	4th ditto.	26	7th ditto.
11	3d ditto.	27	6th ditto.
12	day before Ides.	28	5th ditto.
13	Ides.	29	4th ditto.
14	19th before Cal. of Feb.	30	3d ditto.
15	18th ditto.	31	day before Cal. Feb.
16	17th ditto.		

The nones and ides of March, May, July, and October, are two

days later than in January, the nones falling on the 7th, and the ides on the 15th of those months; the 2nd of March will be therefore the 6th before the nones, and so on. In all the other months, the calends, nones, and ides hold the same places as in the month of January. In the months which have but 30 days, the number of days before the calends will, of course, be one less, and in February, three less. In leap years, the additional day was inserted in February, as in our calendar; but instead of making a 29th day, the 24th was reckoned twice, and being called in Latin *sexto Cal. Mart.*, (or sixth day before the calends of March,) this, with the addition of bis (twice), gave the name of *bissextile* to the leap year, which it still retains. The first year reckoned on this principle was a leap year. (A.U.C. 708, or 46 B.C.)

Julius Cæsar was killed soon after the reformation of the calendar, and his plan was so little understood, that, instead of making the fourth year a bissextile, a leap year was reckoned every third year, as though the length of the true year had been 365 days 8 hours. This error was discovered 37 years after, at which time thirteen intercalations had taken place instead of ten, and the year began three days too late. The calendar was accordingly again corrected, not by throwing out the three superfluous days at once, but by an order that the twelve following years should be all of 365 days each, and that there should be no leap year until A.U.C. 760, or A.D. 7. From that time the account has been kept without error, and the Roman year has been adopted by almost all Christian nations, with no other variation than taking the birth of Christ as the commencement, instead of the building of Rome.

If the given Roman year be less than 754, deduct it from 754; if the given Roman year be not less than 754, deduct 753 from it; the remainder gives the year (B. C. and A. D., in the first and second cases respectively) in which the Roman year commences.

Ex.—Required the year	780	A.U.C.	Required the year	701 A.U.C.
deduct	753		754	
	27	A.D.	701	
			53	B.C.

The Olympiads.

The Greeks computed their time by the celebrated era of the Olympiads, which date from the year 776 B.C., being the year in which Corœbus was successful at the Olympic games. This era differed from all others in being reckoned by periods of four years instead of single years. Each period of four years was called an Olympiad, and in marking a date, the year and Olympiad were both mentioned. The year was luni-solar, of 12 or 13 months. The names of the months varied in the different states of Greece, but the Attic months are most usual. They are as follows:—

Hecatombeon,	Gamelion,
Metageitnion,	Anthesterion,
Boedromion,	Elaphebolion,
Pyanepsion,	Munychion,
Mœmacterion,	Thargelion,
Poseideon,	Seirophorion.

In the year of 13 months, the additional month was inserted after Poseideon, and called the second Poseideon.

The months consisted of 30 and 29 days alternately, and the short year in consequence contained 354 days, while the intercalary year had 384. The third year of the first Olympiad consisted of 13 months, and the first and fourth years of the second Olympiad were also intercalary; consequently in the first Olympiad there were 1446 days, and in the second 1476, making together 2922, exactly equal to eight Julian years: this mode of intercalation would therefore precisely bring about the commencement of the ninth year to the same season, as that of the first year. But as the Olympic months followed the course of the moon, and 99 such months contained 2923½ days, the moon was in consequence a day and a half in advance of the reckoning. The error was, however, allowed to accumulate until it reached three days, which was in four Olympiads, or sixteen years, to the last of which three days were added. This corrected the errors with respect to the moon, but it threw out the commencement of the year, as regarded the seasons, making it three days too late. No means were adopted to remedy this until the fortieth Olympiad, the last year of which was made to consist of 12 months only, instead of 13 as usual, and the forty-first Olympiad began with the same days of the moon and sun as the first had done 160 years before. By this reckoning, the year always began between the new and full moon before or after the summer solstice, though more commonly after; and it continued in use until 432 B.C. or fourth year of the eighty-sixth Olympiad, when the cycle of 19 years was invented by Meton. This astronomer found that the Attic months no longer followed the course of the moon, but that the new moon nearest the summer solstice, which should have been the first day of the 87th Olympiad, would actually take place on the 13th day of Seirophorion, in the 4th year of the 86th Olympiad. He therefore proposed to commence the 87th Olympiad from that day, and to adopt a new system of intercalation. He supposed 235 moons to be exactly equal to 19 solar years, and that in every period of 19 years, the new and full moons would recur regularly at the same seasons. Nineteen years of 12 moons each would contain 228 moons, and consequently 7 moons were to be added. These were inserted in the 3d, 5th, 8th, 11th, 13th, 16th, and 19th years. Instead also of making the months of 30 and 29 days alternately, he determined that each month should consist nominally of 30 days, but that every 63d day should be omitted in numbering. The third day of Boedromion, for example, was omitted in the first year, the 6th of Poseideon, and so on to the end of the nineteenth year, when the last exemptile day (the 3d of Thargelion) was retained, making that year to consist of 385 days. This cycle was in use above a century, but was not quite accurate; 19 solar years are equal to about 6939 days, 14 hours and a half, and 235 lunations to 6939 days, 16 hours and a half, or 2 hours more. In the year 330 B. C. this excess amounted to only 11 hours; but by the cycle of Meton, to above 52 hours, he having made 19 years equal to 6940 days;

when another astronomer, Calippus, having made several observations on the solstice, calculated that the excess made 1 day in 76 years. He, therefore, invented the cycle of 76 years, called from him the Calippian, which consisted of 27759 days, exactly equal to 76 Julian years, but above 14 hours in excess of the true solar year. In this period were included 940 lunations, equal to 27758¾ days. The system of Calippus began in the 8th year of the Metonic cycle (330 B. C.), and is frequently referred to as a date by Ptolemy. It is supposed that he altered the periods of inserting the intercalary months, but this is doubtful. The system of Calippus continued in use as long as the Olympiads were employed, and was exactly equal to the Julian, on an average of years.

To reduce the date by Olympiads to our era, multiply the past Olympiad by four, and add the odd years. Subtract the sum from 777 if before Christ, and subtract 776 from the sum if after Christ, the remainder will be the beginning of the given year; to decide on the exact day would be very difficult, on account of the alterations which the system has undergone. It will be, perhaps, sufficient to observe that the year begins within a fortnight of the middle of July.

Ex.—The 3rd month of the 2nd year of the 135th Olympiad is required.

134 Olympiads elapsed.
4
536
2 years.
538

777
538
239

The year began in July, 239 B.C.; the 3d month is consequently Sept. 239.

Required the beginning of the 1st year of the 195th Olympiad.

194
4
776
1
777
776
1 A.D. *Ans.* July, A.D. 1.

N.B. Some authors, as Jerome and Eusebius, have confounded the Olympiads with the Era of the Seleucides, and computed them from the 1st of Sept.

The Christian Era.

The Christian era, used by almost all Christian nations, dates from January 1st, in the middle of the fourth year of the 194th Olympiad, in the 753rd of the building of Rome, and 4714th of the Julian period. It was first introduced in the sixth century, but was not very generally employed for some centuries after.

The Christian year in its division follows exactly the Roman year; consisting of 365 days for three successive years, and of 366 in the fourth year, which is termed leap year. This computation subsisted for 1000 years throughout Europe without alteration, and is still used by the followers of the Greek church; other Christians

have adopted a slight alteration, which will be shortly explained. The simplicity of this form has brought it into very general use, and it is customary for astronomers and chronologists, in treating of ancient times, to date back in the same order from its commencement. There is unfortunately a little ambiguity on this head, some persons reckoning the year immediately before the birth of Christ, as 1 B.C., and others noting it with 0, and the second year before Christ with 1, making always one less than those who use the former notation. The first is the most usual mode, and will be employed in all our computations.

The Christian year (or Julian year), arranged as we have shewn, was 11′ 11″ too long, amounting to a day in nearly 129 years; and towards the end of the sixteenth century, the time of celebrating the church festivals had advanced ten days beyond the periods fixed by the council of Nice in 325. It was in consequence ordered, by a Bull of Gregory XIII., that the year 1582 should consist of 355 days only, which was effected by omitting ten days in the month of October, viz., from the 5th to the 14th. And, to prevent the recurrence of a like irregularity, it was also ordered, that in three centuries out of four, the last year should be a common year, instead of a leap year, as it would have been by the Julian calendar. The year 1600 remained a leap year, but 1700, 1800, and 1900 were to be common years. This amended mode of computing was called the New Style, and was immediately adopted in all Catholic countries, while the Old Style continued to be employed by other Christians. Gradually the New Style was employed by Protestants also. The last ten days of 1699 were omitted by the Protestants of Germany, who, in consequence, began the year 1700 with the New Style; and in England the reformed calendar was adopted in the year 1752, by omitting eleven days, to which the difference between the styles then amounted. The alteration was effected in the month of September, the day which would have been the third being called the fourteenth. The Greeks and Russians still use the Old Style.

To turn the Old Style to the New,

From the alteration of style to the 29th Feb. 1700, add 10 days.
From 1st March 1700 to 29th February 1800, add 11 days.
— —— 1800 — —— 1900, — 12 days.
— —— 1900 — —— 2100, — 13 days.

Examples, 17th March, 1801, O.S. is 29th March 1801, N.S.
19th Feb. 1703, O.S. is 2nd March 1703, N.S.
24th Dec. 1690, O.S. is 3rd Jan. 1691, N.S.
20th Dec. 1829, O.S. is 1st Jan. 1830, N.S.

There will sometimes be a difference of one year in a date, from the circumstance that, in many countries, the time of beginning the year has varied. In England, until the year 1752, the year was considered to begin on the 25th of March; any date, therefore, from the 1st of January to the 24th of March, will be a year too little. It had been the practice for many years preceding the change of style to write both years, by way of obviating mistakes, as 1st of February, 170$\frac{7}{8}$ or 1707-8, meaning the year 1708 if begun in Jan., or 1707 if begun in March.

In some countries, Easter-day was the first day of the year, in others the 1st of March, and in others, again, Christmas-day; but no certain rule can be given, as even in the same nation different provinces followed a different custom. The day of the week is, however, frequently added in old dates, which will at once clear up the ambiguity, as in the Table at p. 32, the day of the week answering to any given date is shewn by inspection.

All nations, at present using either the Old or New Style begin the year on the 1st of January.

The CREATION has been adopted as an epoch by Christian and Jewish writers, and would have been found very convenient, by doing away with the difficulty and ambiguity of counting before and after any particular date, as is necessary when the era begins at a later period. But, unfortunately, writers are not agreed as to the precise time of commencing. We consider the creation as taking place 4004 years B.C.; but there are about a hundred and forty different variations in this respect*. The following are those that have been most generally used:—

THE ERA OF CONSTANTINOPLE.

In this era the creation is placed 5508 years B.C. It was used by the Russians until the time of Peter the Great, and is still used in the Greek church. The civil year begins the first of September, and the ecclesiastical towards the end of March: the day is not exactly determined.

To reduce it to our era, subtract 5508 years from January to August, and 5509 from September to the end.

Example.	The month of March	6901	The month of Oct.	7302
		5508		5509
		1393		1793

ERA OF ANTIOCH, AND ERA OF ALEXANDRIA.

We place these together, because, although they differed at their formation by 10 years, they afterwards coincided. They were both much in use by the early Christian writers attached to the churches of Antioch and Alexandria. In the computation of Alexandria, the creation was considered to be 5502 years before Christ, and, in consequence, the year 1 A.D. was equal to 5503. This computation continued to the year 284 A.D., which was called 5786. In the next year (285 A.D.), which should have been 5787, ten years were discarded, and the date became 5777. This is still used by the Abyssinians.

The era of Antioch considered the creation to be 5492 years before Christ, and, therefore, the year 285 A.D. was 5777. As this was equal to the date of Alexandria, the two eras, from this time, were considered as one.

Dates of the Alexandrian era are reduced to the Christian era by subtracting 5502 until the year 5786, and after that time by subtracting 5492.

In the era of Antioch 5492 are always subtracted.

* See Companion for 1828, p. 49.

The Abyssinian Era.

The Abyssinians reckon their years from the creation, which they place in the 5493rd year before our era*, on the 29th of August, Old Style; and their dates will consequently exceed ours by 5492 years and 125 days. They have 12 months of 30 days each, and 5 days added at the end, called Pagomen, from the Greek word ἐπαγομναι, *added*. Another day is added at the end of every 4th year. To know which year is leap year, divide the date by 4, and if 3 remain, the year will be leap year. It always precedes the Julian leap year by one year and four months. The following are names of the months, with their beginnings referred to the old style.

Mascaram,	29th August.	Miyazia,	27th March.
Tekemt,	28th September.	Genbot,	26th April.
Hedar,	28th October.	Sene,	26th May.
Tahsas,	27th November.	Hamle,	25th June.
Ter,	27th December.	Nahasse,	25th July.
Yacatit,	26th January.	Pagomen,	24th August.
Magabit,	25th February.		

To reduce Abyssinian time to the Julian year, subtract 5492 years and 125 days.

The Abyssinians also use the era of Martyrs, or Dioclesian, with the same months as in the above.

The Jewish Era.

The Jews usually employed the Era of the Seleucides, until the fifteenth century, when a new mode of computing was adopted by them. Some insist strongly on the antiquity of their present era; but it is generally believed not to be more ancient than the century above named.

They date from the creation, which they consider to have been 3760 years and 3 months before the commencement of our era. Their year is luni-solar, consisting either of twelve or thirteen months each, and each month of twenty-nine or thirty days. The civil year commences with or immediately after the new moon following the equinox of autumn. The months, with the number of days in each, are as follow:—

1	Tisri . . . . . 30 days		(Veadar) . . . . . 29 days
2	Marchesvan, or Chesvan or Bul, 29 or 30	7	Nisan, or Abib . 30
3	Chisleu. . . . . 29 or 30	8	Jyar, or Zius . . 29
4	Thebet 29	9	Sivan. 30
5	Sebat 30	10	Thammuz 29
6	Adar. 29	11	Ab 30
		12	Elul 29

And in intercalary years 30.

The month Veadar is omitted in years of twelve months.

The average length of the year of twelve months is 354 days; but,

* The Abyssinians place the birth of Christ in the 5500th year of the Creation, and consequently eight years after our era.

by varying the length of Marchesvan and Chisleu, it may consist of 353 or 355 days also. In the same manner, the year of thirteen months may contain 383, 384, or 385 days. In nineteen years, twelve years have twelve months each, and seven years thirteen months. The following table of nineteen years will shew the number of months in each year, as well as the first day of their year, reduced to the New Style: the first day will not always be quite accurate, as certain lucky and unlucky days require the postponement of a day in some years. The year must be divided by 19, and the remainder will shew the year of the cycle. If there be no remainder, it is the nineteenth year.

Year of the Cycle.		Months.
The 1st begins about the	2d of October, and consists of	12
2d	22d of September,	12
3d	10th „	13
4th	29th „	12
5th	19th „	12
6th	8th „	13
7th	27th „	12
8th	16th „	13
9th	5th of October,	12
10th	25th of September,	12
11th	14th „	13
12th	2d of October,	12
13th	21st of September,	12
14th	10th „	13
15th	29th „	12
16th	18th „	12
17th	7th „	13
18th	25th „	12
19th	14th „	13

To reduce the Jewish time to ours, subtract 3761, and the remainder will show the year: the beginning of the year may be ascertained by the above table, and the months must be counted from that time.

Example—Required the 1st of Chisleu 5588.

5588	19)5588(294
3761	38
1827	178
	171
	78
	76
	2

The remainder shews the year 5588 to be the second of the cycle, and consequently to begin on the 22d of September. The 1st of Chisleu will therefore be about the 20th of November, 1827.

The ecclesiastical year begins six months earlier, with the month of Nisan. Consequently, when the given year is ecclesiastical, deduct a year in the date from Nisan to Elul, inclusive.

The Jews frequently in their dates leave out the thousands, which

they indicate by placing the letters לפק meaning לפרט קטון "according to the lesser computation."

[*It will be unnecessary to mention the various other epochs that have taken place from the creation, as those detailed are the only ones that have been in general use.*]

The Era of Nabonassar

received its name from that of a prince of Babylon, under whose reign astronomical studies were much advanced in Chaldæa. The years are vague, containing 365 days each, without intercalation. The first day of the era was Wednesday,* 26th February, 747 B.C.

To find the day of any Julian year on which the year of Nabonassar begins, subtract the given year, if before Christ, from 748, and, if after Christ, add it to 747. Divide the result by 4, omitting fractions, and subtract the quotient from 57, (*i.e.* the number of days, from Jan. 1 to Feb. 26). If the quotient exceed 57, add 365 as often as necessary, before subtraction. The remainder will be the day of the year given. The first result before the division by 4, increased by a unit for each 365 added to 57, will be the year of Nabonassar then beginning.

The day of the week on which the year of Nabonassar begins may be known by dividing by 7. If there be no remainder, the day will be Tuesday, if there be a remainder, the day placed below it in the following table will be the day required.

0.	1.	2.	3.	4.	5.	6.
Tu.	W.	Th.	F.	Sa.	Su.	M.

As the above stated rule may be one day in error from the omission of fractions, it may be corrected by the help of this little table.

The year of Nabonassar being given, to find when it begins.

Rule.—Divide the year by 4: subtract the quotient from 57, adding 365, if necessary, as before, the remainder will be the number of days from the 1st of January.

The given year diminished as often as 365 has been added, will shew the number of Julian years from 747 B.C. If it be less than 748, subtract from that number, and the remainder will be the year before Christ: if equal, or more, subtract 747 from it, and the remainder will be the year after Christ.

The Egyptian Era.

The old Egyptian year was identical with the era of Nabonassar, beginning on the 26th February, 747 B.C., and consisting of 365 days only. It was reformed thirty years before Christ, at which period the commencement of the year had arrived, by continually receding, to the 29th August, which was determined to be in future the first day of the year. Their years and months coincide exactly with those of the era of Dioclesian.

It appears from a calculation, that in 30 B.C. the year must have begun on the 31st of August. In which case we must suppose the reformation to have taken place eight years earlier; however that may be, it is certain that the 29th of August was the day

* This is said, by mistake, to be Thursday, in L'Art de vérifier les Dates.

adopted, and the number of the year one more than would have resulted from taking 747 as the commencement of the era.

To reduce to the Christian era, subtract 746 years 125 days.

The old Egyptian year was in use for above a century after Christ. The reformed year being at first used only by the Alexandrians.

The Julian Period

is a term of years produced by the multiplication of the lunar cycle 19, solar cycle 28, and Roman indiction 15. It consists of 7980 years, and began 4713 years before our era. It has been employed in computing time, to avoid the puzzling ambiguity attendant on reckoning any period antecedent to our era, an advantage which it has in common with the mundane eras used at different times.

By subtracting 4713 from the Julian Period, our year is found. If before Christ, subtract the Julian Period from 4714.

The Era of Dioclesian, *called also* The Era of Martyrs,

was much used by Christian writers until the introduction of the Christian era in the sixth century; and is still employed by the Abyssinians and Copts. It dates from the day * when Dioclesian was proclaimed Emperor, at Chalcedon, 29th August, 284. It is called the Era of Martyrs, from the persecution of the Christians in the reign of Dioclesian. The year consists of 365 days, with an additional day every fourth year. Divide the date by 4, and if 3 remain the year is bissextile. It contains 12 months of 30 days each, with 5 additional in common years, and 6 in leap years.

The Coptic months are as follow, with the corresponding time according to the Julian calendar.

Coptic.	Arabic.		Coptic.	Arabic.	
Thoth,	Tot,	Aug. 29.	Phamenoth,	Buramat,	Feb. 25.
Paophi,	Babe,	Sep. 28.	Pharmouti,	Barmude,	Mar. 27.
Athyr,	Hatur,	Oct. 28.	Pashons,	Bashans,	Apr. 26.
Cohiac,	Kyak,	Nov. 27.	Payni,	Baune,	May 26.
Tybi,	Tobe,	Dec. 27.	Epiphi,	Abib,	June 25.
Mesir,	Mashir, Amshir,	Jan. 26.	Mesori,	Meshri,	July 25.

The additional days are called, by the modern Copts, Nisi in common years, and Kebus in leap years. By the ancient Copts Piabotnkuji, and in Arabic Biabotanquji.

The Abyssinian names are given under the head of Abyssinia.

To reduce the years of this era to those of the Christian, add 283 years, 240 days.

When the Dioclesian year is the year after leap year, it begins one day later than usual, and in consequence one day must be added to the Christian year, from the 29th August to the end of the following February.

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* Dioclesian was not in reality proclaimed until some months after this time.

THE GRECIAN ERA, *or* ERA OF THE SELEUCIDES,

dates from the reign of Seleucus Nicator, 311 years and 4 months before Christ. It was used in Syria for many years, and frequently by the Jews until the 15th century, and by some Arabians to this day. The Syrian Greeks began their year about the commencement of September; other Syrians in October, and the Jews about the Autumnal Equinox. We shall not pretend to great accuracy in this era, the opinions of authors being very various as to its commencement.

It is used in the book of the Maccabees, and appears to have begun with Nisan.

Their year was solar, and consisted of 365 days, with the addition of a day every fourth year.

To reduce it to our era, supposing it to begin 1st September, 312 B.C., subtract 311 years and 4 months.

The following are the months used by Greeks and Syrians, with the corresponding Roman months.

Syrian.	Macedonian.	English.
Elul,	Gorpiæus,	September.
Tishrin I.	Hyperberetæus,	October.
Tishrin II.	Dius,	November.
Canun I.	Apellæus,	December.
Canun II.	Audynæus,	January.
Shubat,	Peritius,	February.
Adar,	Dystrus,	March.
Nisan,	Xanticus,	April.
Ayar,	Artemisius,	May.
Haziran,	Dæsius,	June.
Tamus,	Panæmus,	July.
Ab,	Lous,	August.

THE DEATH OF ALEXANDER THE GREAT

dates from the 12th of November, 324 B.C.,* on which day the 425th year of Nabonassar began. This era was computed by years of 365 days, with a leap year of 366 every four years, like the Julian year. The months were of 30 days each, with 5 additional. To compute it, deduct 323 from the given year, and the remainder will be the year of the Christian era. If before Christ deduct the year from 324.

THE ERA OF TYRE

began the 19th of October, 125 B. C., with the month Hyperberetæus. The months were the same as those used in the Grecian era. The year is similar to the Julian.

To reduce it to our era, subtract 124; and if the given year be less than 125, deduct it from 125, and the remainder will be the year before Christ.

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* This would be more accurately 323 B.C., but the above date is more usually adopted.

The Cesarean Era of Antioch

was used, in Syria, by Greeks and Syrians. The months are the same as those given under the Grecian era. The Greeks began with Gorpiæus, in the year 49 B.C., and the Syrians with Tishri I. of 48 B.C.

The Era of Abraham

is used by Eusebius, and begins the 1st of October, 2016 B.C. To reduce this to the Christian era, subtract 2015 years 3 months, and the remainder will be the year and month.

The Spanish Era, *or* Era of the Cæsars,

is reckoned from 1st of January, 38 years B.C., being the year following the conquest of Spain by Augustus; it was much used in Africa, Spain, and the South of France. By a synod held in 1180, its use was abolished in all the churches dependent on Barcelona. Pedro IV. of Arragon abolished the use of it in his dominions in 1350. John I. of Castile did the same in 1382. It continued to be used in Portugal until 1455.

The months and days of this era are identical with those of the Julian Calendar; and, consequently, to turn this time into that of our era, we have only to subtract 38 from the year. Thus the Spanish year 750 is equal to the Julian, 712. If the year be before the Christian era, subtract it from 39.

The Era of Yezdegird III., *or* the Persian Era,

was formerly universally adopted in Persia, and is still used by the Parsees in India, and by the Arabs, in certain computations. This era began on the 16th of June, A. D. 632. The year consisted of 365 days only, and therefore its commencement, like that of the old Egyptian and Armenian year, anticipated the Julian year by one day in every four years. This difference amounted to nearly 112 days in the year 1075, when it was reformed by Jelaledin, who ordered that in future the Persian year should receive an additional day whenever it should appear necessary to postpone the commencement of the following year, that it might occur on the day of the sun's passing the same degree of the ecliptic. This took place generally once in four years; but, after seven or eight intercalations, it was postponed for a year. It will be observed that such an arrangement must be perfect, and that this calendar could never require reformation; but it has the inconvenience of making it very difficult to determine beforehand the length of any given year, as well as that of causing a difference occasionally in the computation of persons living under different meridians; those living towards the east sometimes beginning their year a day after others more westwardly situate; the sun rising in the old sign to those in the former situation, who consequently continued in the old year another day; while the others, having their sun rise in the new sign, began a new year. The present practice of the Parsees in India

varies in different provinces, some beginning the year in September and others in October. The months are as follows: they have each thirty days, and the intercalation of five or six days occurs at the end of Aban.

Ferwardin,	Meher,
Ardibehisht,	Aban,
Khurdad,	Ader,
Tir,	Dei,
Merdad,	Behmen,
Sheriur,	Ispendarmez.

To reduce this era to the Christian year, add 630 to the given year, and the sum will be the year of our era in which the year begins, according to the practice of the Parsees.

Every day of the Persian month has a different name.

The Era of the Armenians.

The Armenians began their era on Tuesday, the 9th of July, A.D. 552. Their year consists of 365 days only, and therefore anticipates the Julian one day in every 4 years.

To know the day of the week on which the Armenian year begins, divide the year by 7; if there be no remainder, the year begins on a Monday: if there be a remainder, the day put under it in this Table will be the first of the year.

0	1	2	3	4	5	6
M.	Tu.	W.	Th.	F.	Sa.	Su.

To reduce the Armenian year to the Julian, divide the given date by 4, and subtract the quotient from 191, adding 365 to 191 if necessary; the remainder will be the days from the beginning of the Julian year, and the Armenian date (diminished by 1, if 365 has been added to 191) added to 551, will give the Christian year.

The Armenian ecclesiastical year begins on the 11th of August, and has an additional day at the end of every fourth year; and consequently coincides in division with the Julian year.

To reduce ecclesiastical Armenian years to our time, add 551 years and 222 days.

In leap years, subtract one day from March 1 to August 10.

Note.—The Armenians frequently use the old Julian style and months in their correspondence with Europeans.

The French Revolutionary Calendar.

In the year 1792, the French nation, in their excessive desire to change all existing institutions, determined on the adoption of a new calendar, founded on philosophical principles. But as they were unable to produce any plan more accurate and convenient than that which was previously in use, they were contented to follow the old plan under a different name, merely changing some of the minor details and subdivisions, and commencing the year at a different time.

The first year of the Era of the Republic began on the 22nd of September, 1792, N. S., the day of the autumnal equinox. There were twelve months in each year of thirty days each, and five additional days at the end, celebrated as festivals. The fourth year was a leap year, called by the French an Olympic year. The months and additional festivals were as follow.

Vendemiaire began 22 Sep.	Germinal began 21 March.
Brumaire . . . . . 22 Oct.	Floréal . . . . . 20 April.
Frimaire . . . . . 21 Nov.	Prairial . . . . . 20 May.
Nivôse . . . . . 21 Dec.	Messidor . . . . 19 June.
Pluviôse . . . . . 20 Jan.	Thermidor . . . 19 July.
Ventôse . . . . . 19 Feb.	Fructidor . . . . 18 August.
Festival of Virtue, 17 Sep.	Festival of Opinion, 20 Sep.
. . . . . Genius, 18 . . .	. . . . . Rewards, 21 . . .
. . . . . Labour, 19 . . .	

In Olympic years, from the 11th Ventôse (which was on the 29th of February) to the end of the year, each day answered to one day earlier than in other years; thus Germinal began on the 20th of March.

The months were divided into decades of ten days each, instead of weeks. These were the names of their days.

Primidi,	Sextidi,
Duodi,	Septidi,
Tridi,	Octodi,
Quartidi,	Novidi,
Quintidi,	Decadi.

As this plan lasted so short a time, it will take less space to insert a table of years corresponding with the Christian era, than to give a rule for the deduction of one era from another.

1	1792—3	8	1799—1800
2	1793—4	9	1800—1801
3	1794—5	10	1801—2
4	1795—6	11	1802—3
5	1796—7	12	1803—4
6	1797—8	13	1804—5
7	1798—9	14	1805—6

The Mahometan Era, *or* Era of the Hegira,

dates from the flight of Mahomet to Medina, which event took place in the night of Thursday, the 15th July, A.D. 622. The era commences on the following day, viz. the 16th of July. Many chronologists have computed this era from the 15th of July, but Cantemir has given examples, proving that, in most ancient times, the 16th was the first day of the era; and now there can be no question that such is the practice of Mahometans. The year is purely lunar, consisting of twelve months, each month commencing with the appearance of the new moon, without any intercalation to bring the commencement of the year to the same season.

It is obvious that, by such an arrangement, every year will begin much earlier in the season than the preceding, being now in summer, and, in the course of sixteen years, in winter. Such a mode of reckoning, so much at variance with the order of nature, could scarcely have been in use beyond the pastoral and semi-barbarous nation by whom it was adopted, without the powerful aid of fanaticism, and even that has not been able to prevent the use of other methods by learned men in their computations, and by governments in the collection of revenue. It will also be remarked that, as the Mahometans begin each month with the appearance of the new moon, a few cloudy days might retard the commencement of a month, making the preceding month longer than usual. This, in fact, is the case, and two parts of the same country will sometimes differ a day in consequence; although the clear skies of those countries where Islamism prevails, rarely occasion much inconvenience on this head. But in chronology and history, as well as in all documents, they use months of thirty and twenty-nine days, alternately, making the year thus to consist of 354 days: eleven times in thirty years, one day is added to the last month, making 355 days in that year. Consequently, the average length of a year is taken at $354\frac{11}{30}$ days, the twelfth of which is $29\frac{191}{360}$, differing from the true lunation very little more than three seconds, which will not amount to a day in less than 2260 years, a degree of exactness which could not have been attained without long continued observations.

The intercalary year of 355 days occurs on the second, fifth, seventh, tenth, thirteenth, fifteenth, eighteenth, twenty-first, twenty-fourth, twenty-sixth, and twenty-ninth years of every thirty years. Any year being given, to know whether it be intercalary or not, divide by thirty, and if either of the above numbers remain, the year will be one of 355 days.

The names of the months, as used by the Turks, with the length of each, are as follow:—

Moharem	30	Shaban	29
Saphar	29	Ramadan	30
Rabiu I.	30	Shawall	29
Rabiu II.	29	Dhu'l kadah	30
Jomadhi I.	30	Dhu'l hajjah	29
Jomadhi II.	29	and in intercal. 30 days.	
Regeb	30		

They have weeks of seven days, named as follow:—

	TURKS.	PERSIANS.	INDIANS.	ANC. ARABIC.	MOD. ARABIC.
Su.	Pazar gun,	Yekshambe,	Etwar,	Bawal,	Yom ahad.
M.	Pazar ertesi,	Doshambe,	Peer or Somwar,	Bahun,	Yom thena.
Tu.	Sale,	Sishambe,	Mungul,	Jebar,	Yom tulta.
W.	Charshambe,	Charshambe,	Boodh,	Dabar,	Yom arba.
Th.	Pershambe,	Panjshambe,	Jumerat,	Femunes,	Yom hamsa.
F.	Juma,	Juma or Adina,	Juma,	Aruba,	Juma.
Sa.	Juma ertesi,	Shambe or Hafta,	Sunneecher,	Shiyar,	Sabt.

To find the day on which any year of the Hegira begins, multiply the years elapsed by 970203, cut off six decimals, add 622.54, and the sum will be the year of the Christian era, and decimal of the day following, in Old Style.

By the table, p. 23, the day of the week on which any Mahometan year begins is shewn; and as, by Table p. 32, 33, the day of the week answering to any day of our calendar may be also known, a comparison of these two will serve to correct the result of the above rule, if it should be a day in error, as will sometimes be the case, on account of the clashing of the Mahometan and Christian leap years.

Example—Required the first day of the year 527.

Ans. 12th Nov. 1132.

970203
526 years elapsed
5821218
1940406
4851015
510.326778
622.54
1132.866778

The year will be 1132, and the day may be known by reducing the decimal, either by multiplying by 12 and 30, or at once by 365. The first way is the easiest, but not so sure to a day. However, with the help of the tables, it may be corrected to the exact time.

By the table in p. 23, the year 527 began on a Saturday, and by table p. 32, 33, the 12th of November, 1132, was on a Saturday: therefore the answer is correct.

To reduce the Christian era to the Mahometan, take 622 from the current year, multiply by 1.0307, cut off four decimals, and add .46; the sum will be the year and decimal of the day. To be corrected as before.

Obs. This rule is calculated for O. S. If the New Style is given, the difference between the styles must be deducted from the answer.

	Moharem. Shawall.				Safar. Regeb.				Rabiu I. Dhu'l hajjah.				Rabiu II. Ramadan.				Jomadhi I.				Jomadhi II. Dhu'l kadah.				Shaban.							
1	8	15	22	29																									S.	S.	S.	S.
2	9	16	23	30																									S.	M.	M.	M.
3	10	17	24					1																					M.	T.	T.	T.
4	11	18	25					2																					T.	W.	W.	W.
5	12	19	26					3																					W.	T.	T.	T.
6	13	20	27					4																					T.	F.	F.	F.
7	14	21	28					5																					F.	S.	S.	S.
																													S.	M.	M.	S.
																													S.	T.	T.	M.
																													M.	W.	W.	T.
																													T.	T.	T.	W.
																													W.	F.	F.	T.
																													T.	S.	S.	F.
																													F.	S.	S.	S.
																													S.	M.	M.	S.
																													S.	T.	T.	M.
																													M.	W.	W.	T.
																													T.	T.	T.	W.
																													W.	F.	F.	T.
																													T.	S.	S.	F.
																													F.	S.	S.	S.
																													S.	M.	M.	S.
																													S.	T.	T.	M.
																													M.	W.	W.	T.
																													T.	T.	T.	W.
																													W.	F.	F.	T.
																													T.	S.	S.	F.

	1	2·	3	4			5·
					6	7·	8
	9	10·	11	12			13·
					14	15·	16
	17	18·	19	20			21·
			24•		22	23	0
	25	26·	27	28			29·

0	F.	Tu.	Su.	Th.	Sa.	W.	M.
1	W.	Su.	F.	Tu.	Th.	M.	Sa.
2	M.	F.	W.	Su.	Tu.	Sa.	Th.
3	Sa.	W.	M.	F.	Su.	Th.	Tu.
4	Th.	M.	Sa.	W.	F.	Tu.	Su.
5	Tu.	Sa.	Th.	M.	W.	Su.	F.
6	Su.	Th.	Tu.	Sa.	M.	F.	W.

Divide the Mahometan year by 210, and the remainder by 30. Look for the last quotient on the left hand, and the remainder at the top. The square of intersection will be the day on which the year begins. The calendar will shew the day of the week answering to any day in the year.

N.B. If the remainder be marked with a dot, the year has 355 days.

INDIAN CHRONOLOGY.

THE natives of India use a great variety of epochs, some of which are but little understood, even by themselves, and almost all are deficient in universality and uniformity, so that the same epoch nominally will be found to vary many days or even a year in different provinces.

The solar, or, more properly, the sidereal year, is that which is most in use for public business, particularly since the introduction of European power into India. This year is calculated by the Indian astronomers at 365 days, 6 hours, 12 minutes, 30 seconds, or, according to others, 36 seconds. Therefore in sixty Indian years there will be a day more than in sixty Gregorian years. The difference arises from not taking into consideration the precession of the equinoxes, being equal in reality to something more than 20 minutes, though by them calculated at 23 minutes.

The luni-solar computation is not at present so common as it formerly was, although still much used in some parts of India, and common every where in the regulation of festivals, and in domestic arrangements. Both the solar and luni-solar forms may be used with most of the Indian eras, though some more particularly affect one form and some the other.

The luni-solar mode varies in different provinces, some beginning the month at full moon, others at new moon: we shall describe that beginning by the full moon, which is used in Bengal; the other method will be easily understood when this is known. Each year begins on the day of full moon preceding the beginning of the solar year of the same date. The months are divided into halves, the first of which is entitled *badi*, or dark, being from the full moon to the new, and the last, *sudi* or bright, from new to full moon. These divisions are sometimes of 14 and sometimes of 15 days, and are numbered generally from 1 to 15, though the last day of the badi half is called 15, and that of sudi is called 30. By a complicated arrangement, a day is sometimes omitted, and again a day is intercalated, so that, instead of going on regularly in numerical order, these days may be reckoned 1, 1, 2, 3, 4, 5, 6, 7, 8, 10. The subject is enveloped in some obscurity, and it will be perhaps sufficient to observe that the time of a lunation is divided into 30 parts called *tiths*, and when two tiths occur in the same solar day, that day is omitted in the lunar reckoning, and restored by intercalation at some other period. When two full moons occur in one solar month, the month also is named twice, making a year of 13 months. In the case, also, of a short solar month, in which there should be no full moon, the month would be altogether omitted. All these circumstances render the luni-solar computation a matter of much difficulty; and to reduce it exactly to our era would require a perfect knowledge of Hindoo astronomy. But as the solar reckoning is by far the most general, we shall only observe that the lunar month precedes the solar month by a lunation *at most*, and consequently a lunar date may be nearly known from the solar time, which is of easy calculation.

We shall begin by the eras which are generally known, and follow with those of more limited use.

THE CALIYUG.—This era is the most ancient of India, and dates from a period 3101 years before Christ. It begins with the entrance of the sun into the Hindoo sign Aswin, which is now on the 11th April, N. S. In the year 1600 the year began on the 7th April, N. S. from which it has now advanced 4 days, and from the precession of the equinoxes, is still advancing at the rate of a day in sixty years. The number produced by subtracting 3102 from any given year of the Caliyug will be the Christian year in which the given year begins.

THE ERA OF SALIVAHANA may be joined here to that of the Caliyug, being identical with it as to names of months, divisions and commencement, and differing only in the date of the year, which is 3179 years more recent than that, and therefore 77 years since our era. It is much used in the southern and western provinces of India, and papers are frequently dated in both eras. The years of this era are called SACA. The number 77 must be added to find the equivalent year of the Christian era. Both these eras are most commonly used with solar time.

THE ERA OF VICRAMADITYA, which has its name from a sovereign of Malwa, may also be placed here, as it uses the same months as the two above mentioned, but it is more generally used with lunar time; this era is much employed in the north of India, and its years are called SAMVAT. It began 57 years before Christ, and that number must be deducted to bring it to our era.

In Guzerat this era is used, but it begins there about the autumnal equinox.

The following are the names of the months :—

HINDUSTANI.	MALABAR.		HINDUSTANI.	MALABAR.	
Bysakh,	Chitera,	or Medam.	Katik,	Arpysee,	or Toolam.
Jeth,	Vyasee,	Edavam.	Aghan,	Cartyga,	Virschigam.
Asar,	Auny,	Mithoonam.	Poos,	Margaly,	Dhanuh.
Sawan,	Audy,	Karkatagam.	Magh,	Tye,	Magaram.
Bhadon,	Auvany,	Chingom.	Fagoon,	Mausee,	Kumbham.
Koonar, or Asin,	Parattasy,	Kany.	Chyt,	Pungunee,	Meenom.

These months all begin on the days of the entrance of the sun into a sign of the Hindoo Zodiac, and they vary from 29 to 32 days in length, though making up 365 days in the total, in common years, and 366 in leap years. The intercalation is made when and where it is required, not according to any arbitrary rule, but by continuing the length of each month, until the sun has completely passed each sign. This will bring about 26 leap years in every century. It would require long and complicated calculations to find exactly the commencement and duration of each month, but we shall not err more than a day or two by considering them to be of 30 and 31 days alternately.

The BENGALEE year appears to have been once identical with the Hegira; but the solar computation having subsequently been adopted, of which the years exceed those of the Hegira by 11 days, it has lost nearly 11 days every year, and is now about 9 years later, the year 1245 of the Hegira beginning in July, 1829, and the Bengalee year 1236 beginning 13th April of the same year.

The number 593 must be added to bring this to the Christian era.

The Bengalee months are similar to those of the Hindustani, given before, differing only in dialect. They are as follow, according to the orthography of the English resident there.

Bysakha,	Sravona,	Kartic,	Maugh,
Joishta,	Bhadra,	Ugrohoyna,	Falgoon,
Assaur,	Aussin,	Pouse,	Choitra.

The 1st of Bysakha is now on the 13th April, and in our leap years on the 12th April. There is, however, a difference of 1 day in about 60 years, as observed before, in speaking of the eras of Caliyug, &c.

The FUSLEE year is pretty generally known in India, and is supposed to be derived from the Hegira. One or two eras are used in India by this name, but according to the most general usage its date is now 1239, which year began on the 15th July, 1829. The first month is AUDY (Sawan), and the last AUNY (Asar). The year is sidereal, and will, therefore, vary a little on that account; but at Madras, the influence of Europeans has caused it to be fixed invariably at the 12th July. But being chiefly used in revenue accounts, its commencement alone is much attended to, the subdivisions being neglected.

Add 590 to reduce this to the Christian era.

The FUSLEE year, as used in Bengal, begins with AUSSIN, in September. The year is lunar, and the full moon preceding the autumnal equinox is the first day. The date also differs from the common Fuslee, being now 1237.

It may be observed that, notwithstanding this variety of dates, the months agree pretty nearly. Thus, Poos in all the eras begins somewhat before the winter solstice, and is followed by Magh, &c.

THE ERA OF PARASURAMA is used in Malayala, in the south of India. This era began in the year 1176, B.C., and is divided into cycles of 1000 years, and at the end of 1000 years, instead of 1001 the next year was called 1. The first cycle ended 176 B.C., the second 825 A.D., and the third should have finished in 1825, in which case the present year would have been 5. But whether from inattention or otherwise, the end of the third cycle was not noticed, and they call the present year 1005, which began on the 15th September, 1829. The year 177 of the second cycle began August 17th, A.D. 1, but the year, like the other years of India, advancing one day in about 60 years, now begins as above stated. In our leap years the 14th of September will agree with its commencement.

A Cycle of 90 years, called Grahaparivrithi, is used in the southern provinces. The year 1830 corresponds with the 54th year of the 21st cycle. The first cycle began 24 years before our era.

To reduce it to the Christian year, multiply the elapsed cycles by 90 and add the odd years, then deduct 24 from the sum, and the remainder will be the year required.

THE CYCLE OF BRIHUSPOTEE (Jupiter) consists of 60 years, and is frequently used in connection with the era of Vicramaditya. There are two different accounts of this cycle. In Bengal, the cycle now passing is the 84th, and the 35th year agrees with A.D.

1830. The first cycle, therefore, begins 3185 years before Christ. By the Telinga account, the first cycle began 3114 years before Christ, and consequently the year 1830 coincides with the 24th year of the 83d cycle. Each year has its peculiar name; that of the 35th year (the ensuing Bengal year) is Plava, and of the 24th (the Telinga) Bikriti.

The days of the week, as used by the Hindoos, are as follows.

Rubbeebar,	Sunday.	Brihuspoteebar,	Thursday.
Soambar,	Monday.	Shukrobar,	Friday.
Mongolbar,	Tuesday.	Sunneebar,	Saturday.
Boodbar,	Wednesday.		

The Persian, Arabic, and Hindoostani names are used by Mahometans, and will be found under the era of the Hegira.

THE CHINESE,

like all the nations of the North East of Asia, reckon their time by cycles of 60 years; instead of numbering them as we do, they give a different name to every year in the cycle. As all those nations follow the same system, we shall detail it here more particularly. They have two series of words, one of ten, and the other of twelve words; a combination of the first words in both orders is the name of the first year; the next in each series are taken for the second year; and so to the tenth: in the eleventh year, the series of ten being exhausted, they begin again with the first, combining it with the eleventh of the second series; in the twelfth year, the second word of the first series is combined with the twelfth of the second; for the thirteenth year, the combination of the third word of the first list with the first of the second list is taken, that list also being now exhausted. To make this clearer, we shall designate the series of ten by the Roman letters, that of twelve by the italics, and the whole cycle of 60 will stand thus:—

1	a *a*	16	f *d*	31	a *g*	46	f *k*
2	b *b*	17	g *e*	32	b *h*	47	g *l*
3	c *c*	18	h *f*	33	c *i*	48	h *m*
4	d *d*	19	i *g*	34	d *k*	49	i *a*
5	e *e*	20	k *h*	35	e *l*	50	k *b*
6	f *f*	21	a *i*	36	f *m*	51	a *c*
7	g *g*	22	b *k*	37	g *a*	52	b *d*
8	h *h*	23	c *l*	38	h *b*	53	c *e*
9	i *i*	24	d *m*	39	i *c*	54	d *f*
10	k *k*	25	e *a*	40	k *d*	55	e *g*
11	a *l*	26	f *b*	41	a *e*	56	f *h*
12	b *m*	27	g *c*	42	b *f*	57	g *i*
13	c *a*	28	h *d*	43	c *g*	58	h *k*
14	d *b*	29	i *e*	44	d *h*	59	i *l*
15	e *c*	30	k *f*	45	e *i*	60	k *m*.

The series of 10 is designated in China by the name of 天幹 tëen kan, or celestial signs.

Their characters and names are,—

1. 甲 kêa. 2. 乙 yĭh. 3, 丙 ping. 4. 丁 ting. 5. 戊 woo. 6. 己 ke. 7. 庚 kang. 8. 辛 sin. 9. 壬 jin. 10. 癸 kwey.

The series of 12 are the horary characters, and are named 地支 teche, terrestrial signs; they are as follows:—1. 子 toze. 2. 丑 chow. 3. 寅 yin. 4. 卯 maou. 5. 辰 shin. 6. 巳 sze. 7. 午 woo. 8. 未 we. 9. 申 shin. 10. 酉 yew. 11. 戌 seŭ. 12. 亥 hae.

These characters being substituted for their equivalent letters in the cycle, will show the Chinese name of every year; for example, 甲子 kia tzse is the first year; 庚寅 kang yin, the 27th.

The Chinese months are lunar, of 29 and 30 days each. Their years have ordinarily 12 months, but a thirteenth is added whenever there are two new moons while the sun is one sign of the Zodiac. This will occur seven times in nineteen years.

The boasted knowledge of the Chinese in astronomy has not been sufficient to enable them to compute their time correctly. In 1290 A.D., the Arab Jemaleddin composed a calendar for them, which remained in use until the time of the Jesuit Adam Schaal, who was the director of their calendar until 1664. It then remained for five years in the hands of the natives, who so deranged it, that when it was again submitted to the direction of the Christians, it was found necessary to expunge a month to bring the commencement of the year to the proper season. It has since that time been almost constantly under the care of Christians.

The first cycle, according to the Romish Missionaries, began February 2397 B.C.* We are now, therefore, in the 71st cycle, the 27th of which will begin in 1830. To find out the Chinese time, multiply the elapsed cycle by 60, and add the odd years; then, if the time be before Christ, subtract the sum from 2398; but if after Christ, subtract 2397 from it; the remainder will be the year required.

The Chinese frequently date from the year of the reigning sovereign, and in that case there is no way of having the corresponding date, but by a list of Emperors. We subjoin a list of those who have reigned for the last two centuries.

TARTAR DYNASTY.

He-tsung began to reign	A.D.	1616.
Chwang-lëĕ		1627.
Shun-che		1644.
Kang-he		1662.
Yung-ching		1723.
Këen-lung		1736.
Kea-king		1796.
Taou-kwang		1821, now Emperor.

THE JAPANESE

have a cycle of 60 years, like that of the Chinese, formed by a combination of words of two series. The series of ten is formed

* Dr. Morrison carries it back to the 61st year of Hwang-te, 2596 B.C., making the present year to fall in the 74th cycle; but, according to the celebrated historian Choo-foo-tsze, Hwang-te reigned about 2700 B.C., making 75¼ cycles from that period, which is, probably, more correct than either of the above statements.

of the names of the elements, of which the Japanese reckon five, doubled by the addition of the masculine and feminine endings, je and to.

1	kino-je,	wood.
2	kino-to,	
3	fino-je,	fire.
4	fino-to,	
5	tsutsno-je,	earth.
6	tsutsno-to,	
7	kanno-je,	metal.
8	kanno-to,	
9	midsno-je,	water.
10	midsno-to,	

The series of 12 is made up of the signs of the Zodiac.

1	ne, rat.
2	oos, ox,
3	torra, tiger.
4	ov, hare.
5	tats, dragon.
6	mi, serpent.
7	ooma, horse.
8	tsitsuse, sheep.
9	sar, ape.
10	torri, hen.
11	in, dog.
12	y, hog.

By substituting these words for the letters in the cycle, under the head of China, the Japanese names are found. Thus, the first year of a cycle is called kino-je ne, the 35th, tsutsno-je in, and so on. The cycles coincide with those of the Chinese; but a name is given to them instead of numbering them. Their years begin in February, and are luni-solar, of 12 and 13 months, with the intercalation as before mentioned under the head of China. The first cycle is said to begin 660 B.C.; but this cannot be correct, unless some alteration has taken place, as the Chinese cycle then began 657 B.C. We know, however, too little of Japan to pronounce positively respecting it, but thus far it is certain, that the cycle now coincides with that of the Chinese.

To an article of this nature, it may not be thought superfluous to append a slight notice of the manner in which some of the aboriginal tribes of America reckoned their time, before its discovery by the natives of Europe. The science of astronomy seems to have advanced there to a much greater extent than is commonly imagined. The extraordinary accuracy of the Mexicans in their computations, surpassing that of the Europeans of their time, cannot be accounted for otherwise than by the supposition that they had derived it from some people more civilized than themselves; and would appear incredible, if not well attested by Spanish authors of the fifteenth century, as well as by many hieroglyphic almanacs yet remaining, of undoubted antiquity. The Peruvians and Muyscas had lunar years of great accuracy also; but this is less surprising, as the phases of the moon are sufficiently visible to the eye, and their returns frequent. We shall detail that of the Mexicans only.

The year of the Mexicans consisted of 365 days; it was composed of eighteen months of twenty days each, and five additional, called *nemontemi*, or void. At the end of a cycle of fifty-two years, thirteen days were added, and at the end of another cycle, twelve days, and so on alternately, making an addition of twenty-

five days in 104 years. This made the mean year to consist of 365 days, 5 hours, 46 minutes, $9\frac{3}{13}$ seconds, being only 2′ 39$\frac{1}{13}$″ shorter than the truth. As the wanton destruction of the Mexican monuments and hieroglyphic records by their cruel and barbarous conquerors has left little to study, and the extermination of the Mexicans of superior order has done away with their system, we shall not detail the names of their months and particulars of their cycles, which afford striking coincidences with those of the Tartars, Japanese, &c. We shall only add that their first cycle began in the month of January, A.D. 1090.

II. LIST OF THE CORRESPONDENCE OF ERAS WITH THE YEAR 1830.

[*When the commencement of the year coincides with the Christian year, that alone will be given; when it begins at a different season, the month in which the 1st of January 1830 occurs will be also stated.*]

Arrangement in preced. Article.		*Correspondence with 1830.	Abbreviations.
1	Roman year	2583	A.U.C.
2	Olympiads — 7th month 1st year of	652	Olymp.
3	Year of the World (Constantinopolitan account)	7338	A.M. Const.
4	Ditto (Alexandrian account)	7322	A.M. Alex.
5	Ditto (Abyssinian account) 24th Tahsas	7322	A.M. Abyss.
6	Ditto (Jewish account) 7th Thebet	5590	A.M.
7	Era of Nabonassar — 8th month of	2578	Ær. Nab.
8	Egyptian — 24th Cohiac	2576	A. Æg.
9	Julian Period	6543	Jul. Per.
10	Dioclesian, or of Martyrs — 24th Cohiac	1546	Ær. Diocl.
11	Seleucides, or Grecian — Audynæus	2141	Ær. Seleuc.
12	Death of Alexander — 3rd month	2153	A.Mort. Alex.
13	Era of Tyre — 4th month	1954	Ær. Tyr.
14	Cæsarean of Antioch (Greek account) Audynæus	1878	Cæs. Ant.
15	Ditto (Syrian account) Canun II.	1877	
16	Era of Abraham — 4th month	3845	Ær. Abr.
17	Spanish, or of the Cæsars	1868	A. Cæs.
18	Persian Era of Yezdegird III. (Parsee account) 4th or 5th month	1199	A. Pers.
19	Armenian common year — 29th Drethari	1279	An. Arm.
20	Ditto ecclesiastical year — 12th Kagoths	1278	
21	Hegira — 7th Regeb	1245	A.H.
22	Caliyug — Poos or Margaly	4931	Cal.
23	Salivahana (Saca) — do.	1752	Saca.
24	Vicramaditaya (Samvat) — do.	1886	Samvat.
25	Bengalee — do.	1236	Beng. Sen.
26	Fuslee (Bengal account) — do.	1237	Fusl.
27	Ditto (Telinga account) — do.	1239	Fusl.
28	Parasurama — 4th month of	1005	Paras.
29	Grahaparivrithi — 54th year of 21st cycle		Grah.
30	Brihuspotee (Bengal) — 35th year of 84th cycle		Cyc. Brih.
31	Ditto (Telinga) — 24th year of 83rd cycle		
32	Chinese year — 11th month of Kechow, 71st cycle		

III.—THE JEWISH CALENDAR.

1830.			
Jan.	1	7th of Thebet.	
	4	10	Siege of Jerusalem.
	25	1st of Sebat.	
Feb.	24	1st of Adar.	
March	7	12	Fast of Esther.
	8	13	Purim.
	26	1st of Nisan.	
April	8	15	Passover.
	9	16	Morrow of the Passover.
	14	21	Seventh day of the Feast.
	15	22	Passover ends.
	24	1st of Jyar.	
May	12	19	School Feast.
	23	1st of Sivan.	
	28	6	Pentecost.
	29	7	Second Feast of Pentecost.
June	22	1st of Thammuz.	
July	8	17	Fast.
	21	1st of Ab.	
	29	9	Fast. Destruction of the Temple.
August	20	1st of Elul.	
Sept.	18	1st of Tisri.	New Year, 5591.
	19	2	Second Feast of New Year.
	20	3	Fast of Gedaliah.
	27	10	Fast.
Oct.	2	15	Feast of Tabernacles.
	3	16	Second Feast.
	8	21	Feast of Branches.
	9	22	Feast of Tabernacles ends.
	10	23	Feast of the Law.
	18	1st of Marchesvan.	
Nov,	17	1st of Chisleu.	
Dec.	11	25	Dedication of the Temple.
	17	1st of Thebet.	

IV. CALENDAR OF THE TURKS.

1830.		Year of the Hegira 1245.	
Jan.	1	7th of Regeb.	
	14	20	Exaltation of Mahomet.
	25	1st of Shaban	
Feb.	8	15	Barah's Night.
	23	1st of Ramadan	Month of Abstinence.
March	23	29	Defeat of the Turks before Vienna.
	25	1st of Shawall . .	Grand Bairam.
	26	2	
	27	3	
April	23	1st of Dhu'l kadah	Kurban Bairam.
May	23	1st of Dhu'l hajjah	First Month of the Mussulman Year 1246.
June	21	1st of Moharem	
	30	10	Ashura.
July	21	1st of Saphar	
Aug.	19	1st of Rabiu I.	
	31	11	Birth of Mahomet.
Sept.	18	1st of Rabiu II.	
Oct.	17	1st of Jomadhi I.	
Nov.	5	20	Taking of Constantinople.
	16	1st of Jomadhi II.	
Dec.	15	1st of Regeb.	

V. *A Table to find the Day of the Week of any given date, from the year 5000 B. C. to the year 2700 of the Christian Æra.*

CENTURIES BEFORE CHRIST.							NEW STYLE.				CENTURIES AFTER CHRIST.						
4800 4100 3400 2700 2000 1300 600	4700 4000 3300 2600 1900 1200 500	4600 3900 3200 2500 1800 1100 400	4500 3800 3100 2400 1700 1000 300	4400 3700 3000 2300 1600 900 200	5000 4300 3600 2900 2200 1500 800 100	4900 4200 3500 2800 2100 1400 700 0					1700 2160		1800 2200		1500 1900 2300	1600. 2000. 2400.	
							OLD STYLE.				0. 700. 1400. 2100.	100. 800. 1500. 2200.	200. 900. 1600. 2300.	300. 1000. 1700. 2400.	400. 1100. 1800. 2500.	500. 1200. 1900. 2600.	600. 1300. 2000. 2700.
C	D	E	F	G	A	B	0	28.	56.	84.	C	D	E	F	G	A	B
D	E	F	G	A	B	C	.1	.29	.57	.85	B	C	D	E	F	G	A
F	G	A	B	C	D	E	2	30	58	86	A	B	C	D	E	F	G
G	A	B	C	D	E	F	3	31	59	87	G	A	B	C	D	E	F
A	B	C	D	E	F	G	4.	32.	60.	88.	E	F	G	A	B	C	D
B	C	D	E	F	G	A	.5	.33	.61	.89	D	E	F	G	A	B	C
D	E	F	G	A	B	C	6	34	62	90	C	D	E	F	G	A	B
E	F	G	A	B	C	D	7	35	63	91	B	C	D	E	F	G	A
F	G	A	B	C	D	E	8.	36.	64.	92.	G	A	B	C	D	E	F
G	A	B	C	D	E	F	.9	.37	.65	.93	F	G	A	B	C	D	E
B	C	D	E	F	G	A	10	38	66	94	E	F	G	A	B	C	D
C	D	E	F	G	A	B	11	39	67	95	D	E	F	G	A	B	C
D	E	F	G	A	B	C	12.	40.	68.	96.	B	C	D	E	F	G	A
E	F	G	A	B	C	D	.13	.41	.69	.97	A	B	C	D	E	F	G
G	A	B	C	D	E	F	14	42	70	98	G	A	B	C	D	E	F
A	B	C	D	E	F	G	15	43	71	99	F	G	A	B	C	D	E
B	C	D	E	F	G	A	16.	44.	72.		D	E	F	G	A	B	C
C	D	E	F	G	A	B	.17	.45	.73		C	D	E	F	G	A	B
E	F	G	A	B	C	D	18	46	74		B	C	D	E	F	G	A
F	G	A	B	C	D	E	19	47	75		A	B	C	D	E	F	G
G	A	B	C	D	E	F	20.	48.	76.		F	G	A	B	C	D	E
A	B	C	D	E	F	G	.21	.49	.77		E	F	G	A	B	C	D
C	D	E	F	G	A	B	22	50	78		D	E	F	G	A	B	C
D	E	F	G	A	B	C	23	51	79		C	D	E	F	G	A	B
E	F	G	A	B	C	D	24.	52.	80.		A	B	C	D	E	F	G
F	G	A	B	C	D	E	.25	.53	.81		G	A	B	C	D	E	F
A	B	C	D	E	F	G	26	54	82		F	G	A	B	C	D	E
B	C	D	E	F	G	A	27	55	83		E	F	G	A	B	C	D

JANUARY OCTOBER					FEBRUARY MARCH NOVEMBER					JANUARY, LY APRIL JULY					MAY					JUNE					FEBRUARY, LY AUGUST.					SEPTEMBER DECEMBER					A	B	C	D	E	F	G
1	8	15	22	29		5	12	19	26		2	9	16	23	30		7	14	21	28		4	11	18	25		6	13	20	27		3	10	17	24	31	Su.	Sa.	F.	Th.	W.	Tu.	M.
2	9	16	23	30		6	13	20	27		3	10	17	24	31	1	8	15	22	29		5	12	19	26		7	14	21	28		4	11	18	25		M.	Su.	Sa.	F.	Th.	W.	Tu.
3	10	17	24	31		7	14	21	28		4	11	18	25		2	9	16	23	30		6	13	20	27	1	8	15	22	29		5	12	19	26		Tu.	M.	Su.	Sa.	F.	Th.	W.
4	11	18	25		1	8	15	22	29		5	12	19	26		3	10	17	24	31		7	14	21	28	2	9	16	23	30		6	13	20	27		W.	Tu.	M.	Su.	Sa.	F.	Th.
5	12	19	26		2	9	16	23	30		6	13	20	27		4	11	18	25		1	8	15	22	29	3	10	17	24	31		7	14	21	28		Th.	W.	Tu.	M.	Su.	Sa.	F.
6	13	20	27		3	10	17	24	31		7	14	21	28		5	12	19	26		2	9	16	23	30	4	11	18	25		1	8	15	22	29		F.	Th.	W.	Tu.	M.	Su.	Sa.
7	14	21	28		4	11	18	25		1	8	15	22	29		6	13	20	27		3	10	17	24		5	12	19	26		2	9	16	23	30		Sa.	F.	Th.	W.	Tu.	M.	Su.

Explanation of the use of the Table in pages 32 *and* 33.

Any year being given, either before or after Christ, Old or New Style, find the century at the top of the Table in p. 32, and the odd years in the middle column. The square of intersection contains the Dominical Letter for the year. Then look for the given day of the month in the Table above, and the day of the week will be shewn in the column under the Dominical Letter at the right hand.—If the given year be a Leap Year, and the month January or February, it must be looked for under the head January, LY, February, LY. A leap year after Christ is marked by a dot on the right hand; one before Christ is marked on the left.

I. SAINTS' DAYS, FIXED FESTIVALS, &c.

We think it right to publish the following classification of the various days which are retained in the Calendar of the Church, and which are still printed in most almanacs. It will be seen from this abstract, § 1 and § 2, that we have retained, in the British Almanac, all those days which are still in any way observed. We have rejected only those which have become entirely obsolete; for the days of this class, of which the offices were entirely abolished at the Reformation, were only retained in the Calendar, out of that respect to established usage which marked the proceedings of those eminent men by whom the liturgy was settled*. There can be no useful reason for continuing to print them in a popular Almanac;—for if we except Bishop Blas, the saint of the Wool-combers; Crispin, of the Shoe-makers; Leonard, of Prisoners; Clement, of Blacksmiths; and Nicholas, of Sailors and Thieves, there is not a name of the long list forming § 3, whose commemoration in the least degree influences the proceedings of the present time.

§ 1. *Fixed Festivals, &c. observed by the Church of England, and for which Offices are appointed.*

Jan.	1	Circumcision.
	6	Epiphany.
	25	Conversion of St. Paul.
	30	King Charles I. Mart.
Feb.	2	Purification (Candlemas Day).
	24	St. Matthias
Mar.	25	Annunciation.
Apr.	25	St. Mark.
May	1	St. Philip and St. James.
	29	King Charles II. restored.
June	11	St. Barnabas.
	24	St. John Baptist.
	29	St. Peter.
July	25	St. James.
Aug.	24	St. Bartholomew.
Sept.	21	St. Matthew.
	29	St. Michael.
Oct.	18	St. Luke.
	28	St. Simon and St. Jude.
Nov.	1	All Saints.
	5	Gunpowder Plot.
	30	St. Andrew.
Dec.	21	St. Thomas.
	25	Christmas Day.
	26	St. Stephen. 27 St. John. 28 Innocents.

These days are inserted in the Calendar of the British Almanac, and are there distinguished, as they are in the Calendar attached to the Prayer Book, by Italics.

* The Church of Rome, and the Greek Church, have saints for every day in the year. The Reformers of the English Church provided offices only for very remarkable commemorations, and struck out of the Calendar altogether a great number of anniversaries, leaving only those which *at their time* were connected with popular feeling or tradition. "Our Reformers," says Nicholls, in his Paraphrase on the Common Prayer, "having laid aside the celebration of a great many Martyrs' days, which had grown too numerous and cumbersome to the church, thought fit to retain this day (All Saints'), wherein, by a general commemoration, our church gives God thanks for them all."

§ 2. *Fixed Festivals not observed by the Church of England, but important to be known as regulating Terms of Law and Payments of Rent, or forming Anniversaries of National Observance.*

Jan.	6	Old Christmas Day.
	13	Hilary.
Feb.	14	Valentine
Mar.	1	St. David.*
	17	St. Patrick.
Apr.	6	Old Lady Day.
	23	St. George.
May	13	Old May Day.
July	6	Old Midsummer Day.
	7	Thomas à Becket.
	15	Swithin.
Aug.	1	Lammas Day.
Oct.	11	Old Michaelmas Day.
Nov.	2	All Souls.
	11	St. Martin.
	22	St. Cecilia.

These days are inserted in the Calendar of the British Almanac.

§ 3. *Saints' Days, &c. not observed by the Church of England, (though inserted in the Calendar attached to the Prayer Book,) and not important to be known, because they do not regulate Terms of Law or Payments of Rent, and do not form Anniversaries of National Observance.*

Jan.	8	Lucian.
	18	Prisca.
	20	Fabian.
	21	Agnes.
	22	Vincent.
Feb.	3	Blas.
	5	Agatha.
March	2	Chad.
	7	Perpetua.
	12	Gregory.
	18	Edward, K. of West Saxons.
	21	Benedict.
April	3	Richard, Bp. of Chichester.
	4	St. Ambrose.
	19	Alphege.
May	3	Invention of the Cross.
	6	St. John Port Latin.
	19	Dunstan.
	26	Augustus, 1st Abp. of Canterbury.
	27	Ven. Bede.
June	1	Nicomede.
	5	Boniface.
	17	St. Alban.
	20	Tra. of Ed. K. of West Saxons.
July	2	Visit. of B. V. Mary.
	4	Translation of St. Martin.
	20	Margaret.
	22	Magdalen.
	26	St. Anne.
Aug.	6	Transfiguration.
	7	Name of Jesus.
	10	St. Laurence.
	28	St. Augustine.
	29	St. John Baptist beheaded.
Sept.	1	Giles.
	7	Enurchus.
	8	Nat. of B. V. Mary.
	14	Holy Cross.
	17	Lambert.
Sep.	26	St. Cyprian.
	30	St. Jerome.
Oct.	1	Remigius.
	6	Faith.
	9	St. Denys.
	13	Edward the Confessor
	17	Ethelreda.
	25	Crispin.
Nov.	6	Leonard.
	13	Britius.
	15	Machutus.
	17	Hugh, Bp. of Lincoln.
	20	Edmund, King and Martyr.
	23	St. Clement.
	25	Catharine.
Dec.	6	Nicholas.
	8	Conception of B. V. Mary.
	13	Lucy.
	16	O Sapientia.
	31	Silvester.

These days are not inserted in the Calendar of the British Almanac.

*** This day was omitted in part of the impression of the Almanac for 1830, by a typographical error.**

VII. OBSERVATIONS OF A NATURALIST*.

JANUARY.

Winter Food of Non-Migratory Birds.—The annual migration of birds appears to be much more general in North America than in Europe, owing no doubt to the greater severity of the winters there, which would render it impossible for the soft-billed birds to find food. Even in our own country, some of those which do not migrate are in severe winters exposed to great privations. At first view, it appears not a little singular, that, among birds differing very little in habit, some should remain with us and others should migrate; but a slight knowledge of natural history will lead to a solution of the singularity. Soft-billed birds, like the robin, depend upon caterpillars and worms for their principal food; and as many species of caterpillars live through the winter, such birds are enabled to procure food. In open weather, also, earth-worms occasionally make their appearance, as well as small slugs. The red-breast, accordingly, and more particularly the wren, may be seen prying with a keen eye into the roots of trees and shrubs for the caterpillars which lurk there, and hopping over the grass plots in gardens to pounce upon an earth-worm that may have strayed from its hole; while the wagtail endeavours to pick up a scanty meal of the small winter gnats which occasionally play about running water in fine weather. The winter supply, however, of live insects would be far from sufficient for the numerous soft-billed birds which haunt our woods and hedges in summer; and, therefore, it has been so ordained, that the nightingale, the white-throat, and many others, should migrate during the winter to a warmer climate, where they can be in little danger of perishing by famine. The swallows, flycatchers, and other birds which capture insects on the wing, would obviously be starved to death at the very commencement of the cold weather.

Trees.—There is an effect of exposure which we have remarked as peculiar to some species of trees more than to others, in consequence of the disposition of their main branches. When a tree, for example, is disposed to grow tall and pyramidal, rather than short and spreading, the force of the winds can only bend it; but when it sends out large arms from the top of the main stem, the wind acts upon these as upon a lever, and endeavours to twist the trunks round. Many large old trees may accordingly be seen, the trunks of which are more or less twisted, whilst others of the same age, that have grown in a sheltered situation, are as straight and taper as when they were transplanted from the nursery rows. This remark is well exemplified among the fine chesnut trees in Greenwich Park. It is the disposition of the chesnut to throw out

* These observations are partly extracted from the Journal of an observer of Nature, and partly abridged from periodical works of the year. They are to be considered merely as facts in some degree pertaining to the course of the seasons.

two and sometimes three main arms, and when these go off in the direction of north-west and south-east, so as to expose the trunk of the tree on the one side to the prevalent winds from the south and the west, and on the other, to the less frequent but more violent winds from the north and east, the trunk is sometimes twisted nearly round.

February.

Effects of Snow on Vegetation.—It appears at first somewhat singular that the alpine plants, such as auriculas, some saxafrages, &c., should be of difficult culture in our climate, and are not unfrequently destroyed by our winters, whilst they flourish in their native snows; but it should be observed that, in the Alps, where, growing wild, they are throughout the winter covered with a complete coating of snow, which, from not being a rapid conductor of heat, is instrumental in the earth's not parting quickly with its warmth,—in the same manner as a woollen garment prevents the escape of heat from the body,—this protects them through the cold season; whereas, in our climate, these plants are exposed alternately to the severe influence of frost, unprotected by the snow, and to long-continued rains. The frost injuring the structure of the leaves, they become readily rotted by the wet; and although the plants are not often entirely killed, they are too much injured to ensure a good shew of bloom. It is necessary, for the cultivation of the finer sorts of auriculas, &c., to imitate, as far as possible, their native climate, by protecting them, in a frame or shed, both from the severe frosts and wet. It is, however, to be remarked, that our climate opposes another and a serious objection to the easy cultivation of this class of plants, arising from the great variation of temperature. Even during the winter months the plants frequently commence growing before the spring arrives, and thus are rendered more obnoxious to the succeeding frosts; and, in addition, the strength of the plants (which should be reserved for the great effort to be made in the spring) is exhausted before its due season—whilst, in the Alps, they lie entirely dormant until the sun at once melts the snow, and calls them into life and blossom. To prevent the plant growing out of its season, it is found best to place the pots in a part of the garden exposed to a northern or western aspect.

Nest of the House Sparrow.—The variations of instinct manifested by animals in certain circumstances is well exemplified in the house sparrow *(Fringilla domestica)*. This bird usually selects for her nest a hole in a wall, or under the eaves of a house, but sometimes makes choice of a very different situation. In all cases, the builder pays more attention to warmth than neatness; and when the nest hole is furnished with a sufficient roof, the sparrow does little more than toss in a bundle of loose straw for a foundation, over which a bed of feathers is laid in a similar careless manner. But though the materials are not nicely interwoven and rounded, as is done by the goldfinch, the wren, and many other birds, the sparrow contrives to have her cradle-chamber soft, snug, and comfortable.

In the suburbs of London, and some other places, the sparrow seems to be partial to trees; though not, as might be supposed from its usual habits, to such as could afford a canopy of thick boughs, to roof-in its nest; for it most commonly pitches on a high and exposed branch, as if it were more anxious to be out of the reach of cats than of cold winds. A canopy, however, is never dispensed with; but in the latter case the bird is at the trouble of constructing one, of straw, inartificially piled upon the roof. The entrance is by a side passage, and partakes of the same character of rough workmanship which prevails in other parts of the structure.

During the last spring (1829) we particularly examined the structure of a sparrow's nest built amongst ivy leaves on the wall of a house at Southend, Lewisham, Kent, which was, of course, in circumstances considerably different from either of the preceding. The thick clustering of the ivy leaves above the nest was not, however, deemed a sufficiently warm coping, and a roof of straw had been constructed, though much more slight than in nests built on the exposed branches of trees.

March.

Swarms of Butterflies.—An immense swarm of butterflies, of the species called the Painted Lady (*Papilio cardui*, Linn.), forming a column of from ten to fifteen feet broad, was observed in the district of Grandson, Canton de Vaud, in 1828. They traversed the country with great rapidity, from north to south, all flying onwards, low, equally and closely together, and not turning from their course on the approach of other objects. The fact is the more singular, as the caterpillars of the *Vanessa cardui* are not gregarious, but are solitary from the moment they are hatched. Professor Bonelli of Turin, however, observed a similar flight of the same species of butterflies in the end of the March preceding their appearance at Grandson. Their flight was also directed from south to north, and their numbers were immense. At night the flowers were literally covered with them. Towards the 29th of March their numbers diminished, but even in June a few still continued. They have been traced from Coni, Raconni, Susa, &c. A similar flight of butterflies is recorded, at the end of the last century, by M. Loche, in the Memoirs of the Academy of Turin. During the whole season, those butterflies, as well as their larvæ, were very abundant, and more beautiful than usual*.

Supposed Identity of the Whitebait and Shad.—The whitebait has hitherto been generally considered as the young of the shad, but this doctrine has been recently combated by Mr. William Yarrell, F.L.S.†, who was led to investigate this subject by observing the early appearance (March) of whitebait in a fishmonger's shop; and, knowing that shads, which they were supposed to be, did not make their appearance till much later (May), he took up and per-

* la Société de Phys. et d'Hist. Nat. de Genève.

† Zool. Journ., No. XIV.

severed in a course of investigation which lasted from March to August, 1828. The specific distinction between the two fishes, on which he relies as of the greatest value, is the difference of their anatomical character, and especially in their number of vertebræ. "The number of vertebræ in the shad," he says, "of whatever size the specimen may be, is invariably fifty-five; the number in the whitebait is uniformly fifty-six; and even in a fish of two inches, with the assistance of a lens, this exact number may be distinctly made out."

April.

All Nature seems at work—slugs leave their lair—
The bees are stirring—birds are on the wing—
And Winter, slumbering in the open air,
Wears on his smiling face a dream of Spring.
COLERIDGE.

Indications of Spring.—The following table (which we extract from the "Magazine of Natural History") is the register of more than sixty years' observations, made by Robert Marsham, Esq., at Stratton-Hall, which is situated nearly in the centre of Norfolk. The earliest date recorded is the year 1735, and the latest observation appears in 1800. The *least* variations are in the time of the appearance of the migratory birds, and the hatching of young rooks. The *greatest* range is in the blossoming of the turnip, the appearance of the yellow butterfly, and the singing of the thrush.

	Earliest.	Latest.	Greatest Difference observed in
Thrush sings	1735, Dec. 4	1766, Feb. 13	56 years— 81 days.
Nightingale sings	1752, April 7	1792, May 19	59 years— 42 days.
Churn Owl sings	1781, April 29	1792, June 26	46 years— 58 days.
Cuckoo sings	1752, April 9	1767, May 7	51 years— 29 days.
Ring Doves coo	1751, Dec. 27	1761, March 20	47 years— 83 days.
Rooks build	1800, Feb. 2	1757, March 14	53 years— 40 days.
Young Rooks	1747, March 26	1764, April 24	52 years— 29 days.
Swallows appear	1736, March 30	1797, April 26	62 years— 27 days.
Frogs and Toads croak	1750, Feb. 20	1771, May 4	57 years— 73 days.
Yellow Butterfly appears	1790, Jan. 14	1783, April 17	36 years— 93 days.
Snowdrop appears	1778, Dec. 24	1795, Feb. 10	65 years— 48 days.
Turnip flowers	1796, Jan. 10	1790, June 18	55 years—129 days.
Wood Anemone blows	1790, March 16	1784, April 22	30 years— 37 days.
Hawthorn leaf	1759, Feb. 11	1784, April 22	59 years— 70 days.
Hawthorn flowers	1750, April 13	1799, June 2	59 years— 50 days.
Sycamore leaf	1750, Feb. 22	1771, May 4	57 years— 71 days.
Birch leaf	1750, Feb. 21	1771, May 4	52 years— 72 days.
Elm leaf	1779, March 4	1784, May 6	47 years— 63 days.
Mountain Ash leaf	1779, March 5	1771, May 2	43 years— 57 days.
Oak leaf	1750, March 31	1799, May 20	54 years— 50 days.
Beech leaf	1779, April 5	1771, May 10	53 years— 35 days.
Horse Chesnut leaf	1763, March 10	1771, May 2	47 years— 52 days.
Spanish Chesnut leaf	1794, March 28	1770, May 12	36 years— 45 days.
Hornbeam leaf	1794, March 7	1771, May 7	40 years— 61 days.
Ash leaf	1779, April 2	1772, May 26	36 years— 54 days.
Lime leaf	1794, March 19	1756, May 7	43 years— 49 days.
Maple leaf	1794, March 15	1771, May 7	34 years— 53 days.

May.

Effects of Water on the form of Leaves.—The very striking difference which circumstances produce in the form of vegetables is prettily illustrated in the instance of the water crow-foot (*Ranun-*

culus aquatilis), whose white blossoms may be seen sprinkled over the waters of every pond, or slow running stream, during the summer months. It is known that the bottom of the stems of particular plants, in certain situations, change to a bulbous structure, of which change the Timothy grass (*Phleum*) and fox-tail grass (*Alopecurus*) are examples. Before this change of structure was discovered (by M. Leers, if we mistake not), botanists frequently described the same grass under different names, as in the instance of the *Phleum pratense* and *Alopecurus geniculatus*. The beech, the sycamore, and still more the ash, also illustrate the fact, by producing in stiff dry soils only a few stunted roots; whereas, in a deep, rich, free soil, the minutest fibre expands with facility, and innumerable fibres are thus developed.—(Du Hamel, *Physique des Arbres*, i. 82.)

The water crow-foot exemplifies on the same plant the effect of difference in situation, analogous to those varieties in soil. The leaves which are under water are minutely divided into thread-like leaflets, while those which float on the surface of the water are broad, rounded, and entire.

Unusual abundance of the Lackey Moth.—Last summer was remarkable for the extraordinary numbers of the caterpillars of the lackey moth (*Lasiocampa neustria*), whose eggs were figured in the Companion to the Almanac for 1829, page 29. Every hedge and orchard in the vicinity of London swarmed with them, and many trees were in consequence stripped of their leaves. Four or five summers ago we remember a similar abundance of the caterpillars of the small Ermine Moth (*Yponomeuta padella*, Latreille). The causes of such extraordinary fluctuations are, in the present state of our knowledge, altogether inexplicable.

June.

The Hop Fly.—It is during this month that the hop plant is liable to be infested with the insect well known under the name of the hop-fly (*Aphis humuli*, Linn.). The fecundity of this insect is altogether incalculable. We have counted more than a thousand on a single leaf, and supposing that an individual plant bears a thousand leaves (a small estimate) it may have to give nourishment from its juices to a million of aphides. Small as the insect is, so great a number require constant food, that it is surprising a single hop-plant escapes entire destruction; but though the plantations are often, from this cause, prematurely tinged with an autumnal-like brown, they usually partially recover about the end of July and take a renewed growth, for the aphides disappear at this time. Their extraordinary numbers will be less wondered at when it is recollected that M. Réaumur proved by experiment, that one aphis may be the progenitor of 5,904,900,000 descendants, and he further supposes that in one year there may be twenty generations. They are, in fact, endowed with a principle of fecundity peculiar to themselves, and not possessed by any other animal,—being

at one time viviparous, and at another oviparous. The same genus of insects is extensively destructive also to beans, peas, and many species of flowers. Our geraniums and monthly rose-trees are frequently infested with them; and our China-asters, in the early stage of growth, are in many cases so weakened by them as to be prevented from blowing.

Vulgar error respecting the Fly called the Horse-stinger.—The prejudices of the common people frequently originate in the most far-fetched analogies and inaccurate observations; but even among the better-informed classes, whole tribes of creatures altogether harmless are regarded with horror, and shrunk from as if they were endowed with the most formidable means of injuring.

The larger dragon flies (*Libellulina*, Mac Leay) are in England universally called *horse-stingers*, on the supposition that they have a propensity to sting horses, and (it may be presumed) any other animal which may irritate them. But not one of this tribe of insects is furnished with a sting. They have, however, a pair of most formidable-looking jaws or mandibles, though even these are not strong enough to inflict any injury on the larger animals, and are only employed to crush a fly, or to wing a moth or a butterfly.

July.

Different Colours of the Eggs of Birds.—It is a remarkable fact in the economy of Nature, that of those birds whose nests are the most liable to discovery, and whose eggs are most exposed to observation from the form of the nests, the eggs are of that colour which is the least different from the surrounding objects; whilst those birds whose eggs are of a bright and positive colour, hide their nests in the hollows of trees, or never quit them, excepting in the night, or sit immediately that they have laid one or two eggs. It is also to be observed that of those species which build an exposed nest, and the females of which alone perform the duty of incubation, the colour of the female is much less bright than that of the male, and more in harmony with the objects by which she is surrounded during the period in which she sits upon her eggs. It would seem, therefore, that those birds which lay a brightly-coloured egg have the instinct to make a close nest, or to place it in the least exposed situations; while those which lay a sober-coloured egg are less solicitous to conceal it from the notice of their enemies. M. Gloger, a German naturalist, has paid great attention to this curious circumstance, and has very recently published an elaborate memoir, in a work printed at Berlin, (*Verhandlungen der Gesellschaft naturforschender Freunde in Berlin*, tom. i., 1829,) in which he notices the habits of all the species of birds indigenous to Germany, in confirmation of the theory. Our limits will not allow us to notice the particular species which he enumerates; but it may be sufficient to excite attention to this subject, to mention, that the birds which lay an egg perfectly white (the most attractive of colours) make their nests in holes of the earth, and cavities of trees, such as the kingfisher and the woodpecker, or construct

them with a very narrow opening, as the domestic swallow; that the same coloured egg is found amongst the birds which scarcely quit their nests in the day, as hawks and owls; and that such birds as doves, which only lay one or two eggs, and sit immediately after, have their eggs white. The bright blue or bright green egg belongs to birds which make their nests in holes, as the starling, or construct them of green moss, or place them in the midst of grass, but always well covered. The eggs of many gallinaceous birds, that make their nests carelessly in the grass, are of a pale and less decided green, such as those of the partridge and pheasant. Of the mixed-coloured eggs, those of which white forms the ground belong to birds that make very close nests. Speckled eggs, with a dark or dirty ground, belong to the largest number of species. Almost all the song-birds lay such eggs; and, building open nests, they almost invariably line the inside of them with materials of a harmonious colour with the eggs, so that no evident contrast is presented which would lead to their destruction.

August.

Diverging Wane-clouds (Cirrostratus).—It can scarcely have escaped the observation of those who are the least attentive to atmospherical phenomena, that the light wane-clouds which prevail during the summer and autumn, frequently assume a diverging form, streaming across the firmament, like radii from a centre. This centre, however, is, in every instance which we have observed, placed beyond the boundaries of the visible horizon; and it may be this which has led meteorologists to refer the phenomenon to optical deception. On the contrary, we are convinced, from the observation of nearly twenty years, that the divergence is not optical, but real; and our scientific friends, to whom we have many times pointed it out, have uniformly agreed with us in referring the phenomenon to electricity, electro-magnetism, or some other similar cause. The wind unquestionably exerts some influence, as may be seen in the feathery wavings which often occur among streaks of wane-cloud, giving some the appearance of an arrow, and others of a horse's tail floating on the wind. That the vaulted appearance, sometimes also assumed by wane-clouds, is not an optical deception, we can prove, by having more than once witnessed a single streak crossing the sky, in a right line, from horizon to horizon; and M. Saussure, in his interesting "Voyages dans les Alpes," mentions a similar rectilineal cloud, observed by him from an Alpine elevation, and consequently of much greater extent than those which we have observed in the vicinity of London.

Butterflies.—We have frequently remarked, and more particularly in the autumnal months, that the small garden white butterflies (*Pontia Rapæ*, Haworth), during sunny weather, congregate in crowds around the margins of ponds and other moist places. At Compton Basset, in Wiltshire, we once counted above fifty of these butterflies all assembled within a few yards on the sludge which had just been left by the water of a pond par-

tially dried up by the sun. What was most remarkable, they seemed to have entirely lost the pugnacious disposition which they almost uniformly display when they meet with their congeners on the wing. At the pond, on the contrary, all was harmony among these light-winged belligerents, no one disturbing its neighbour, though they stood side by side, and almost touching one another. We have this autumn (1829) remarked a similar congregating of the same species of butterflies on the *watered* roads in the vicinity of London.

Bright Mornings preceding Rain.—It is often observed on those clear sunny mornings which occur not rarely in summer and autumn, that it is very likely, if not certain, to rain before evening. And there is frequently much truth in the remark. We recollect that the shepherds of the Kyle division of Ayrshire draw an indication of a change of weather, founded on the same principle. The two high mountains in the isle of Jura, called from their form the Paps of Jura, are distant sixty or eighty miles, and of course are seldom seen from the uplands of Kyle; but when they do appear on the far horizon, like twin cones formed by an azure cloud, the shepherds always predict approaching rain, and are seldom wrong. The reason is, that when moisture accumulates in the air, before it begins to be precipitated, it imparts to it a higher refractive power, and it becomes, in consequence, more bright and transparent.

September.

Effects of Sea Air.—Those who frequent the sea-coast are not long in discovering that their best dyed black hats become of a rusty brown; and similar effects are produced on some other colours. The brown is, in fact, *rust*. Most, if not all, the usual black colours have iron for a basis, the black oxide of which is developed by galls, logwood, or other substances containing gallic acid. Now the sea-air contains a proportion of the muriates over which it is wafted; and these coming into contact with anything dyed black, part with their hydrochloric (*muriatic*) acid, and form brown hydrochlorate of iron, or contribute to form the brown or red oxide, called rust. The gallic acid, indeed, from its superior affinity, has the strongest hold of the iron; but the incessant action of the sea-air, loaded with muriates, partially overcomes this, in the same way as any acid, even of inferior affinity to the gallic, when put upon black stuff, will turn it brown.

Apetalous Flowers.—In last year's Companion we mentioned that some species of violet go on, during the summer, to produce seeds without developing its petals. An anomalous instance of the same kind has occurred to us in the Sweet William (*Dianthus barbatus*), which, for two successive summers, has thrown up strong flowering stems, bearing umbels of numerous flower-buds; but these have never shown even the rudiments of petals, though they perfect seeds as readily as the finest flowered varieties. It should be mentioned that these organs are not essential to any

flower, and, having nothing to do with impregnation, do not affect it either by their presence or absence.

October.

Dissolution and Re-appearance of Clouds.—Those who are favourably situated in a hilly country, but particularly on the sea-coast, may meet with opportunities of observing the meteorological phenomenon of the dissolution of a cloud in one place, and its re-appearance in another. The circumstances under which this happens are when a current of wind tends to carry a mass or stratum of clouds from one eminence towards another, across a sheltered valley or an arm of the sea; for, in this passage, the higher temperature of the lower level sends up a current of heated air, which dissolves the cloud before its journey is half completed; but as soon as the current of wind, with which it is borne along, arrives at the cooler atmosphere of the eminence on the other side of the bay or valley, the dissolved moisture is again precipitated, and re-converted into cloud. Mr. Harvey has observed this phenomenon at Plymouth, where the clouds, in favourable circumstances, are dissolved on passing over the Breakwater, and re-appear on the opposite side. We have observed a similar occurrence, once, at the Cove of Cork, and several times on the Firth of Clyde, when a north-westerly breeze carried the clouds from the Kyles of Bute to the Knock, near Largs, in Ayrshire.

Autumnal Colouring of Leaves.—M. Macaire Prinsep has an interesting article on this subject in the fourth volume of the 'Mémoires de la Société de Physique et d'Histoire Naturelle de Genève.' Having observed that in the leaves which naturally cover each other in part, the uncovered portion is always the more quickly and more deeply coloured, he felt anxious to determine if the change of colour took place in darkness. On sheltering from the action of light, either the whole branches or parts of leaves, he always found that all change of colour was prevented. If the entire leaf was placed in the dark, it fell off green; if only a part, the rest of the parenchyma changed colour, and the covered portion retained its original colour. If he placed in the dark, leaves or portions of leaves which were yellow, before reddening, the leaf fell off yellow, or the covered part retained that colour, while the rest became red; thus demonstrating the necessity of the action of light in all the stages of colouring. The colouring principle of leaves, M. Prinsep ascertains to be a resinous substance common to the leaf in its green and yellow state, with modifications of colour only. Having obtained a quantity of this substance from both green and yellow leaves, he observed that the difference which the two matters present were the solubility in the fat and essential oils of the green matter, and the insolubility of the yellow resin in these same menstrua, and the action of acids and alkalies. In fact, a prolonged abode, even in the cold state, of the yellow resin in the alkalies, brings it back to a beautiful green colour, and the action of heat accelerates this effect. It is then in all respects

similar to the green substance, and becomes, like it, soluble in oils. On the other hand, all bodies capable of yielding their oxygen, as acids, or the employment of means which facilitate the combination of that gas, as the exposure to the air of the alcoholic solution, heat, &c. make the green substance pass to the yellow or red colour; so that the resin of the leaves which have undergone the autumnal colouring, seems to be nothing but green resin oxygenated, or having undergone a kind of acidification. M. Prinsep also observed, that if a yellow leaf of any tree whatever is allowed to remain some time in potash, it becomes of a beautiful green, without experiencing any sensible alteration. Ammonia, and all the alkalies, produce the same effect. On the other hand, when a green leaf is left in an acid, it becomes yellow or red, and potash restores the green colour, &c. M. Prinsep, following M. de Candolle, gives the name of chromule to this substance. MM. Pelletier and Cavantou, who were the first to observe the green substance, had given it the name of chlorophyle, which became inapplicable as a name for a substance common to the colouring principle both of green and yellow leaves. M. Prinsep draws the following general conclusions from his investigations of this subject —1st, All the coloured parts of vegetables appear to contain a particular substance (the chromule), capable of changing colour by slight modifications; 2dly, It is to the fixation of oxygen, and to a sort of acidification of the chromule, that the autumnal change of the colour of leaves is owing.

November.

Singular Snail Shell.—Snails, in order to pass the winter, not only retire to crevices of rocks and other hiding places, but they form an operculum or lid for the mouth of the shell, by which they adhere to the rock, and, at the same time, shut out all access of the air. Some of the species are subgregarious, in consequence, perhaps, of the eggs being usually laid in clusters, and the young hatched from them betaking themselves for food to the nearest plants. In their winter retreats, accordingly, they may often be found huddled together, and even adhering to each other's shells. In a specimen in our possession, this appears to have proved fatal to an individual; for the snail upon whose shell it had fixed, having probably from some cause revived from torpidity the soonest, on making additions to the shell, the opening of the other was cemented in, and of course the inhabitant could not escape.

Utility of Moles.—Mr. Hogg, in the "Quarterly Journal of Agriculture," advocates the cause of moles, and insists that they are of the greatest benefit, instead of being prejudicial to the ground. The mould they throw up serves, says Mr. Hogg, as top dressing, and is of great advantage to grass lands. Even should the farmer neglect to spread the mole-hills, the crow and the lambs will do it for him. The writer also contends against the notion, which he treats as an unfounded prejudice, that the moles destroy the drains.

In support of his defence of the moles, Mr. Hogg refers to the consequences of their destruction on the estates of the Duke of Buccleugh. He maintains, that on all the farms that were formerly overrun with moles, but which have been injudiciously destroyed, two exterminating diseases have been introduced, the pining and the foot rot, which, in some seasons, have nearly annihilated the stocks on these farms, as well as the substance of the men who possess them. The tenants of the duke, it appears, are so sensible of the detriment done to these soft lands and to their stocks by the extirpation of the moles, that two bodies of them have joined in a head, one in Ettrick Forest, and one in Tiviotdale, in order to petition their young chief to spare the remnant of their old friends the *mowdies*, and suffer them to breed again.

Contrivance of the Mole to guard against Moisture—Though moles are partial to fields within the reach of water, they like to have their galleries in dry banks, or the more elevated parts of fields, where they are not in danger of being flooded. An instance in proof of this fell under our observation last winter. In the woods adjoining Shooter's Hill there are considerable patches of swampy ground, which are partially flooded in rainy weather. On passing near one of these swamps, we were struck with the unusual size of a mole-hill, which we at first imagined to be an ant's nest. It was indeed rather a singular locality for a mole-hill, moles being seldom found in woods, and much seldomer in swamps; but though it was as large as six ordinary mole-hills, there could be no doubt that it was one. Upon removing a portion of the upper layer of the mould, the reason of its extraordinary elevation was at once explained; a circular gallery having been constructed on the highest part of the mound, and covered only by about two inches' depth of mould. As this gallery was at least two feet above the level of the swamp, it was out of the reach of any common inundation.

In-door Remarks.—When a naturalist is confined by bad weather, he may frequently turn the circumstance to advantage by examining the productions of his cabinet. If he place, for example, a piece of common sponge under the microscope, it will appear to be furnished with galleries and apartments, and sending forth branches in different directions, till they at length unite and form a compound net-work throughout the sponge. The extremities of the upper shoots are furnished with small openings at the ends of their fibres; and as these fibres are traced downwards from the openings, a whitish substance may be discovered filling the internal hollow part of the ramifications, throughout the whole sponge, resembling catgut of an amber colour, and undoubtedly the habitations of a particular kind of zoophytes. For though it is not easy to discover any species of organization, besides a variety of hollow tubes, inflected and wrought together into a multitude of agreeable forms, some branching like corals, or expanding like a fungus, many rising like a column, others resembling a hollow inverted pyramid, with irregular cavities, entrances, or apertures;—yet from many

obvious resemblances to various other kinds of marine productions, as well as from the chemical analysis of sponges in general, (see MULLER *in Zool. Dan.* T. 85,) we are amply justified in referring them to the class of animal productions. Dr. Grant, Professor of Zoology in the University of London, has even succeeded in discovering the eggs of sponges.

DECEMBER.

Curious Fact in the Economy of Bees.—M. de Jonas de Gelieu, pastor of the churches of Colombier and Auvernier in the principality of Neufchatel, Switzerland, in a work translated into English, under the title of "The Bee Preserver, or Practical Directions for Preserving and Renewing Hives," affirms a very important and singular fact with regard to the economy of bees. It is, *that when two or three distinct hives are united in autumn, they are found to consume together scarcely more honey during the winter than each of them would have consumed singly if left separate.* In proof of this remarkable result, the author states a variety of experiments to which he had recourse, and all of which led uniformly to the same conclusion. And, indeed, he shews positively, by a reference to upwards of thirty hives, six of which had their population thus doubled, that the latter do not consume more provisions during winter than a single hive does, and that, so far from the bees suffering from this, the doubled hives generally send forth the earliest and best swarms.

It is stated that the translator of M. Gelieu's work has practised in Scotland most of the plans recommended in the original publication, with the same results as the author.

Luminous Sea-weed.—Captain Home, R.N., in a paper addressed to the "Quarterly Journal of Science," communicates the discovery that the cause of the brilliant light observed in the sea-weed thrown on the beach at Lancing, on the coast of Sussex, is the animalcule *Sertularia volubilis* of Ellis, described by him in his Corallines and Zoophytes (the *Clytia volubilis* of Lamouroux), but not mentioned to be luminous. On the 8th of December, and three following days, a great quantity of weed had been thrown up by a hard-blowing south-west wind, so that the beach was covered with it to more than two feet deep in many places. After dark a small quantity was collected of the most brilliant, and this was always found to be that which had been left at the first of the ebb, and was only moist, rather than what had been just washed up. Picking out a single spark, and removing from it every extraneous matter, Captain Home ascertained, by the aid of a microscope, that the light was caused by the insects adhering to the sea-weed. The light would remain sometimes steady for about five seconds, often less, and when it ceased, was renewed by touching it with the finger. In a darkened room, by day, no light whatever was emitted; yet the same weed, kept till the evening, was as brilliant as any that had been found.

VIII. TABLE OF REFRACTIONS.

THIS Table is computed upon principles explained by Dr. Young in the *Philosophical Transactions* for 1819; and it appears to agree more perfectly with the latest observations than any other table before published.

The apparent altitude being found in the first column, the second shews the refraction when the barometer stands at 30 inches, which is its mean height on the level of the sea, and the thermometer at 50° of Fahrenheit. The third column contains the difference to be subtracted or added for every minute of altitude, reckoned from the nearest number in the first column.—*Nautical Almanac.*

App. Alt.	Refr B. 30 Th.50°	Diff. for 1′ Alt.	App. Alt.	Refr. B. 30 Th.50°	Diff. for 1′ Alt.	App. Alt.	Refr. B. 30 Th.50°	Diff. for 1′ Alt.	App. Alt.	Refr. B. 30 Th.50°	Diff. for 1′ Alt.
D. M.	M. S.	S.	D. M.	M. S.	S.	D. M.	M. S.	S.	D.	M. S.	S.
0. 0	33.51	11,7	4. 0	11.52	2,2	12. 0	4.28,1	,38	42	1. 4,6	,038
5	32.53	11,3	10	11.30	2,1	10	4.24,4	,37	43	1. 2,4	,036
10	31.58	10,9	20	11.10	2,0	20	4.20,8	,36	44	1. 0,3	,034
15	31. 5	10,5	30	10.50	1,9	30	4.17,3	,35	45	58,1	,034
20	30.13	10,1	40	10.32	1,8	40	4.13,9	,33	46	56,1	,033
25	29.24	9,7	50	10.15	1,7	50	4.10,7	,32	47	54.2	,032
30	28.37	9,4	5. 0	9.58	1,6	13. 0	4. 7,5	,31	48	52,3	,031
35	27.51	9,0	10	9.42	1,5	10	4. 4,4	,31	49	50,5	,030
40	27. 6	8,7	20	9.27	1,5	20	4. 1,4	,30	50	48,8	,029
45	26.24	8,4	30	9.11	1,4	30	3.58,4	,30	51	47,1	,028
50	25.43	8,0	40	8.58	1,3	40	3.55,5	,29	52	45,4	,027
55	25. 3	7,7	50	8.45	1.3	50	3.52,6	,29	53	43,8	,026
1. 0	24.25	7,4	6. 0	8.32	1,2	14. 0	3.49,9	,28	54	42,2	,026
5	23.48	7,1	10	8.20	1,2	10	3.47,1	,28	55	40.8	,025
10	23.13	6,9	20	8. 9	1,1	20	3.44,4	,27	56	39,3	,025
15	22.40	6,6	30	7.58	1,1	30	3.41,8	,26	57	37,8	,025
20	22. 8	6,3	40	7.47	1,0	40	3.39,2	,26	58	36,4	,024
25	21.37	6,1	50	7.37	1,0	50	3.36,7	,25	59	35,0	,024
30	21. 7	5,9	7. 0	7.27	1,0	15. 0	3.34,3	,24	60	33,6	,023
35	20.38	5,7	10	7.17	,9	30	3.27,3	,22	61	32,3	,022
40	20.10	5,5	20	7. 8	.9	16. 0	3.20,6	,21	62	31,0	,022
45	19.43	5,3	30	6.59	,8	30	3.14,4	,20	63	29,7	,021
50	19.17	5,1	40	6.51	,8	17. 0	3. 8,5	,19	64	28,4	,021
55	18.52	4,9	50	6.43	,8	30	3. 2,9	,18	65	27,2	,020
2. 0	18.29	4,8	8. 0	6.35	,7	18. 0	2.57,6	,17	66	25,9	,020
5	18. 5	4,6	10	6.28	,7	19. 0	2.47,7	,16	67	24,7	,020
10	17.43	4,4	20	6.21	,7	20	2.38,7	,15	68	23,5	,020
15	17.21	4,3	30	6.14	,7	21	2.30,5	,13	69	22.4	,020
20	17. 0	4,1	40	6. 7	,7	22	2.23,2	,12	70	21,2	,020
25	16.40	4,0	50	6. 0	,6	23	2.16,5	,11	71	19,9	,020
30	16.21	3,9	9. 0	5.54	,6	24	2.10.1	,10	72	18,8	,019
35	16. 2	3,7	10	5.47	,6	25	2. 4,2	,09	73	17,7	,018
40	15.43	3,6	20	5.41	,6	26	1.58,8	,09	74	16,6	,018
45	15.25	3,5	30	5.36	,6	27	1.53,8	,08	75	15,5	,018
50	15. 8	3,4	40	5.30	,5	28	1.49,1	,08	76	14,4	,018
55	14.51	3,3	50	5.25	,5	29	1.44,7	,07	77	13,4	,017
3. 0	14.35	3,2	10. 0	5.20	,5	30	1.40,5	,07	78	12,3	,017
5	14.19	3,1	10	5.15	,5	31	1.36,6	,06	79	11,2	,017
10	14. 4	3,0	20	5.10	,5	32	1.33,0	,06	80	10,2	,017
15	13.50	2,9	30	5. 5	,5	33	1.29,5	,06	81	9,2	,017
20	13.35	2,8	40	5. 0	,5	34	1.26,1	,05	82	8,2	,017
25	13.21	2,7	50	4.56	,4	35	1.23,0	,05	83	7,1	,017
30	13. 7	2,7	11. 0	4.51	,4	36	1.20,0	,05	84	6,1	,017
35	12.53	2,6	10	4.47	,4	37	1.17,1	,05	85	5,1	,017
40	12.41	2,5	20	4.43	,4	38	1.14,4	,05	86	4,1	,017
45	12.28	2,4	30	4.39	,4	39	1.11,8	,04	87	3,1	,017
50	12.16	2,4	40	4.35	,4	40	1. 9,3	,04	88	2,0	,017
55	12. 3	2,3	50	4.31	,4	41	1. 6,9	,04	89	1,0	,017

IX. THE TIDES.

THE ocean is continually agitated by winds and tempests which disturb its equilibrium; but superficial observation is sufficient to discover that these causes are inadequate to produce all the phenomena which its motion presents. It rises and falls alternately; its depth is observed to be greatest at any given place a certain time after the moon has passed the meridian of that place, after which it decreases until it reaches a certain point, when it again gradually rises. These phenomena recur after nearly the same intervals of time, and are called the *tides*.

The interval of time between low water and the following high water is called *flood tide*, and that between high water and the following low water is called *ebb tide*. If the interval of time between two successive passages of the moon over the same semi-meridian be called a lunar day, there are generally, or on an average, two high tides in one lunar day.

The time of the moon's synodic revolution, or period of her mean conjunctions, is 29.530588716 days.—See the *Exposition du Système du Monde*, p. 23. Hence the mean interval between successive high tides is 12 h. 24 m. 22 s.

The interval, however, which elapses between the moon's southing and the time of high water is subject to great irregularities, which depend principally upon her angular distance from the sun.—See the *Table*, p. 66. These variations depend also upon the distances of both luminaries from the earth, and upon their declinations. Other circumstances being alike, the variations of this interval from the mean interval are greatest when the sun's distance from the earth is greatest, and the moon's distance is least; and when the moon's declination is greatest, and the sun's declination is least: they are greater therefore in the equinoxes than in the solstices. The heights of the tide at high water also vary; they are greatest soon after the moon is in syzygy, and least soon after she is in quadrature; the one are called *spring*, the other *neap* tides. These heights depend also upon the declinations and distances of the luminaries. The time of high water at any port when the moon is in syzygy (new or full), is called by French writers *l'établissement du port*.

The evident connexion between the period of the tides and that of the phases of the moon led philosophers to attribute these phenomena to her action long before their true theory was understood. There is a very remarkable passage in *Pliny*, lib. ii. c. 97, which is quoted by Lalande in the 4th vol. of his *Astronomy*, p. 8. It begins thus, "Æstus maris accedere et reciprocare maxime mirum est, pluribus quidem modis accidit, *verum causa in sole lunâque*." Pliny proceeds to describe very accurately the principal phenomena of the tides. Kepler says, in his *Epist. Ast.* p. 555, "quemadmodum igitur ut magnes magnetem aut ferrum trahat cognatio corporum efficit, sic etiam de luna non est incredibile ut illa moveatur a terra cognato corpore,

licet nec hic nec illic intercedat aliquis contactus corporum. Adeoque quid mirum lunam a terrâ moveri, cum videamus vicissim et lunam transitu suo super vertices locorum causare fluxum Oceani reciprocum in tellure? Nonne satis evidens hoc est documentum communicationis motuum inter hæc duo corpora?" The principle of gravitation is here clearly indicated, but the law is wanting. There is also a passage in his work *De Stellâ Martis*, relating to the same phenomena, which is written in the peculiar style of Kepler's fancy. "Dissolvitur discessu lunæ concilium aquarum seu exercitus qui est in itinere versus torridam, &c." Galileo, in his Dialogues upon the System of the World, expresses his regret that so ingenious a philosopher as Kepler should have given such an explanation. He, on the contrary, attributed them to the rotation of the earth combined with its revolution about the sun. Wallis, in 1666, in letters to Mr. Boyle, derives the phenomena of the tides from the consideration that it is the common centre of gravity of the moon and the earth which describes an orbit about the sun, while they revolve about this common centre. These letters are published in his works, and in the *Phil. Trans.* vol. i. p. 263. Wallis appears to have conjectured the principle of gravitation. In answer to an objection which was made to him in the form of a query, how two bodies which have no tie can have one common centre of gravity? Wallis says, "It is harder to shew how they have, than that they have it—that the loadstone and iron have somewhat equivalent to a tie, though we see it not, yet by the effects we know. And it would be easy to show that two loadstones at once applied in different positions to the same needle at a convenient distance, will draw it not to a point directly to either of them, but to some point between both. . . . As to the present case, how the earth and moon are connected, I will not undertake to show, nor is it necessary to my purpose, but that there is somewhat that does connect them, *as much as what connects the loadstone and the iron which it draws*, is past doubt to those who allow them to be carried about the sun, as one aggregate or body, whose parts keep a respective position to one another, like as Jupiter with his four satellites, and Saturn with his one. Some tie there is that makes those satellites attend their lords and move in a body, though we do not see that tie nor hear the words of command."

In the *Philosophical Transactions*, vol. xiii. p. 10, Flamsteed gives "a correct tide-table, shewing the true times of the high waters at London Bridge to every day in the year 1683." It appears from the remarks of Flamsteed, that the earliest tide-tables which had been calculated for the port of London, had been made on the supposition that the tide always followed three hours after the time of the moon's southing. Mr. Philips, a writer on navigation, appears to have been the first who introduced an empirical correction, varying as the sine of twice the moon's angular distance from the sun, by which the tables were made to agree better with observation. Flamsteed's attention was turned to the subject, from

his having frequently occasion to go to Greenwich by water. Mr. Philips had placed the greatest and least differences between the moon's true southing and the high waters at the full or new and quarter moons, the error of which Flamsteed detected. Flamsteed was the first who gave tide tables, in which the time of high water is calculated, corresponding to the moon's second passage of the same meridian. A more detailed notice of the authors who endeavoured to explain the phenomena of the tides may be found in the 4th vol. of Lalande's Astronomy, in the *Encyclopædia Brit.*, Art. Tides; or in the life of Galileo, which forms part of the Library of Useful Knowledge.

Before Sir Isaac Newton, these explanations were, at best, but vague surmises; to him was reserved the glory of discovering the true theory of these most remarkable phenomena, and of tracing in all its details the operation of the cause which produces them. This theory is contained in the *Philosophiæ Naturalis Principia Mathematica*, Prop. 66. Lib. i. Cor. 19 and 20, and Lib. iii. Prop. 24, 36 and 37, not 26 and 27, as is said in the *Méc. Cél.* vol. v. p. 146. In Prop. 66. Lib. i. Newton shews that in a system of three bodies S, P, T, the motion of P about T, relative to T, is disturbed by the difference of the attractive forces of S upon P and T, and he infers that if a sphere be covered by a fluid, and this system be attracted by a body (S) the equilibrium of the fluid will be disturbed by the difference of the attractive forces of S upon the centre of the sphere, and upon each particle of which the fluid is composed. So that if S revolve about the sphere, the fluid will be constantly in motion relatively to the centre of the sphere.

In the 24th Prop. Newton describes accurately the different phenomena of the tides; but he assumes that the ocean takes the form of a spheroid, in consequence of the attraction of the luminary, which required a proof.

In the 36th Prop. he finds the force which the luminary exerts upon a particle of the ocean; and in the 37th Prop. he determines, from observations made by Sturm, at the mouth of the river Avon, near Bristol, of the heights of the tide when the moon was in conjunction and opposition, the ratio of the force of the moon to that of the sun $\left(\frac{m'}{r'^3} : \frac{m}{r^3}\right)$ to be 4·4815 : 1, not $6\frac{1}{3}$: 1, as Laplace has it; and from this determination he deduced the mass of the earth to be to that of the moon as 39·788 : 1, the density of the sun to be to the density of the earth as 1 : 4, and the density of the moon to that of the earth as 11 : 9.

About the beginning of the eighteenth century many observations of the tides were communicated to the Academy of Sciences at Paris from different parts of France. See *Mém. de l'Acad.* 1710, 1713, &c. In the volume for 1713, Cassini discusses at great length the observations which had been sent to him from Brest; but although they agree with the theory of Newton in their minutest details, he never once mentions the name of that great man, but contents himself with giving empirical tables of

the heights of the tide for the port of Brest, when the moon is in syzygy, or in quadrature, the arguments of which are the declination of the moon and her distance from the earth.

Halley wrote a paper on the subject of the tides, which is given in the *Philosophical Transactions*, vol. xix. p. 445 : it contains an explanation at length of Sir Isaac Newton's theory, but nothing original ; it purports to have been drawn up "for the late King James's use."

In 1738, the Academy of Sciences proposed the theory of the tides as a prize question. The prize was divided between Daniel Bernouilli, professor of Anatomy and Botany at Basle ; Maclaurin, professor of Mathematics in Edinburgh ; Euler, professor of Mathematics at Petersburg, and the Jesuit Cavalleri : the three former founded their theory on the principle of universal gravitation ; the latter adopted the system of vortices, "tourbillons." There is something, however, very like this in Euler. "Explosis hoc saltem tempore qualitatibus occultis missâque *Anglorum quorundam* renovatâ attractione quæ cum saniori philosophandi modo nullatenus consistere potest," &c. Euler then proceeds to shew how a force, varying inversely as the square of the distance, might arise from the revolution of a thin medium about the sun and moon, "Materia subtilis in gyrum acta ac vorticem formans."

The treatises of Bernouilli, Maclaurin, and Euler, are printed in the Jesuits' edition of the *Principia.*

That of Bernouilli contains a table for calculating the time of high water, which is identical with that given in the *Annuaire du Bureau des Longitudes* (*Paris*) up to the present day : we shall see that this table requires modification, in order to be used for the Port of London. The same table is given in Mackay's *Complete Navigator*, p. 58, and in other books of navigation. I shall presently have occasion to discuss this table, and to shew the manner in which it has been constructed. In 1774, Laplace took up this subject. Availing himself of the discoveries of d'Alembert in the *Theory of Hydrodynamics*, he deduced from the equations of motion of fluids, the principal phenomena of the tides. He obtained, first, an accurate solution of the problem upon the hypothesis that the depth of the ocean is constant, or the same all over the globe ; and afterwards, by very delicate considerations, extended his solution to the case which obtains in nature in which the sea is broken by continents and of unequal depth.

It would be impossible here to attempt a discussion of his theory, and a comparison of it with those of his predecessors. This, however, is the less necessary, as I think that, however beautiful the verifications of the theory of the tides may be which Laplace has obtained, they are not so simple as those which are given by the method which I have adopted.

Laplace, in the *Traité de Mécanique Céleste*, vol. ii. p. 232 gives the following expression for the height of the tide.

$$\alpha y = \mathrm{P}\left\{ \frac{\mathrm{L}}{r^3} \cos v^2 \cos 2\,(nt + \varpi - \psi - \lambda) \right.$$

$$+ \frac{L'}{r'^3} \cos v'^2 \cos 2\,(nt + \varpi - \psi_1' - \lambda)\Big\}.$$

In this formula,

r, is the distance of the sun from the centre of the earth.

$nt + \varpi - \psi$, the time reckoned from mid-day.

L, the mass of the sun.

v, the declination of the sun.

r', the distance of the moon from the centre of the earth.

$nt + \varpi - \psi'$, the hour angle of the moon.

L', the mass of the moon.

v', the declination of the moon.

P and λ constants which depend upon the local circumstances of the port, and which must be determined by observation.

It is difficult to say why the dash belonging to λ is omitted in the second member of this equation; it is not a misprint; and Laplace distinctly says, p. 224, "that if $\lambda = \lambda'$, the greatest tide must happen at the instant of new or full moon. This, undoubtedly, does not generally obtain, and therefore in the second term of the equation λ' must be substituted for λ. But the notation of Laplace is at variance with that which is used by himself in other places of the *Méc. Cél.*, and with that which is most common: I shall therefore substitute the following:—

θ, for the hour angle of the sun.

m, ... mass of the sun.

Δ, ... polar distance of the sun.

The same letters with a dash represent the corresponding quantities which refer to the moon, R the distance of a point at the surface of the ocean from the centre of the earth, so that δ R is the variation of this quantity from the mean, C and λ constants dependent upon the locality: we have then

$$\delta R = C\left\{\frac{m}{r^3} \sin^2 \Delta \cos 2\,(\theta - \lambda) + \frac{m'}{r'^3} \sin^2 \Delta' \cos 2\,(\theta' - \lambda')\right\}$$

If we differentiate this expression, in order to obtain the time when δ R is a maximum, that is of high water, and suppose $d\theta = d\theta'$, we have—

$$\tan 2\,(\theta' - \lambda') = \frac{\dfrac{m\,r'^3 \sin^2 \Delta}{m'\,r^3 \sin^2 \Delta'} \sin 2\,(\theta - \theta' - \lambda + \lambda')}{1 + \dfrac{m\,r'^3 \sin^2 \Delta}{m'\,r^3 \sin^2 \Delta'} \cos 2\,(\theta - \theta' - \lambda + \lambda')}$$

If we suppose the luminaries to move in the equator, we have—

$$\delta R = C\left\{\frac{m}{r^3} \cos 2\,(\theta - \lambda) + \frac{m'}{r'^3} \cos 2\,(\theta' - \lambda')\right\} \qquad (1)$$

$$\tan 2\,(\theta' - \lambda') = \frac{\dfrac{m\,r'^3}{m'\,r^3} \cdot \sin 2\,(\theta - \theta' - \lambda - \lambda')}{1 + \dfrac{m\,r'^3}{m'\,r^3} \cdot \cos 2\,(\theta - \theta' - \lambda - \lambda')} \qquad (2)$$

If the parallax be called P, we have

$$\tan 2(\theta' - \lambda') = \frac{\frac{m\,P^3}{m'\,P'^3} \cdot \sin 2(\theta - \theta' - \lambda + \lambda')}{1 + \frac{m\,P^3}{m'\,P'^3} \cdot \cos 2(\theta - \theta' - \lambda + \lambda')} \qquad (2)$$

Equation (1), when the constants λ and λ' are neglected, coincides with the equation of Bernouilli, *Principia*, vol. iii. p. 139, line 4, Glasgow edition, and with that given by Euler, p. 271.

Equation (2) is tabulated in the same volume, p. 165, upon the supposition that $\lambda - \lambda' = 20^\circ$

$$\lambda' = 0.$$

$$\frac{m}{m'} \cdot \frac{P^3}{P'^3} = \frac{2}{5}$$

$$\log. \frac{2}{5} = 9{\cdot}6020600 = \log. \tan 21^\circ\, 48' \text{ nearly.}$$

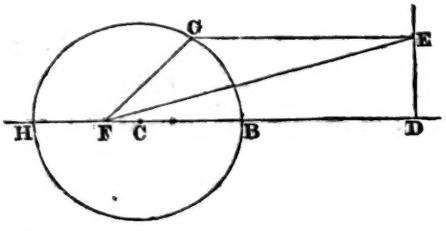
If we suppose that $P = 8''.59$

$$P' = 3454''.1$$

this gives $\frac{m'}{m} = \frac{1}{259270000}$.

and if we suppose the mass of the earth to be $\frac{1}{354936}$ of the sun, this gives the mass of the moon $\frac{1}{73}$ that of the earth.

Equation (2) admits of an easy geometrical construction:—if $\frac{m\,P^3}{m'\,P'^3} = c$, if an ellipse B G H be described such that C B, the semi-major axis, being taken for unity, F C the eccentricity be made $= c$, and F D $= \frac{(1 - c^2)}{c}$, then if the angle H F G be taken = the angular distance of the moon from the sun $= \lambda + \lambda'$, and G E be drawn parallel to F D, cutting D E perpendicular to F D in E, the correction to be applied to the moon's southing, in order to obtain the time of high water, is the angle E F D + λ' converted into time.



The form which the surface of the ocean would assume if the earth were at rest is easily found by means of the well known equation $d\,p = \rho\,(X\,dx + Y\,dy + Z\,dz)$, *Poisson, Mécanique*, vol. ii. p. 322. In this equation p is the pressure which the fluid exercises at any point of which the co-ordinates are x, y, z; X, Y, Z are the forces which act upon the same point in the direction of

the co-ordinate axes; ϱ is the density of the fluid. At the surface $p = 0$, $X\,dx + Y\,dy + Z\,dz = 0$, which is the differential equation of the surface. If the forces which act upon the different points of the fluid are directed to some fixed point or centre, X, Y, Z are the partial differential coefficients, with respect to the variables x, y, z of a function Q; and in this case, the equation to the surface, which is the integral of the equation $X\,dx + Y\,dy + Z\,dz = 0$, can only be Q = constant. In the problem in question, if ζ be the zenith distance of the luminary at any point neglecting parallax, g the force of gravity at unity of distance, and if we suppose, as Euler does, that this force is directed to the centre of the earth, and varies as the square of the distance from that centre,

$$Q = \frac{g}{R} - m\left\{\frac{R\cos\zeta}{r^2} - \frac{1}{(R^2 - 2rR\cos\zeta + r^2)^{\frac{1}{2}}}\right\} - m'\left\{\frac{R\cos\zeta'}{r'^2} - \frac{1}{(R^2 - 2r'R\cos\zeta' + r'^2)^{\frac{1}{2}}}\right\}$$

ecause the fluid is disturbed by the difference of the attractions of m and m' upon each of its particles, and upon the centre of the earth. Expanding the radical

$$Q = \frac{g}{R} + \frac{m}{r} - \frac{mR^2}{2r^3}(1 - 3\cos\zeta^2) + \frac{m'}{r'} - \frac{m'R^2}{2r'^3}(1 - 3\cos\zeta^2)$$

nearly.

$\frac{m}{r}$ is constant by hypothesis, and supposing the quantity $\frac{mR^2}{2r^3}$ to be also constant, the equation to the surface of the ocean is

$$\frac{1}{R} + \frac{3mR^2\cos\zeta^2}{2gr^3} + \frac{3m'R^2\cos\zeta^2}{2gr'^3} = \frac{1}{c}$$

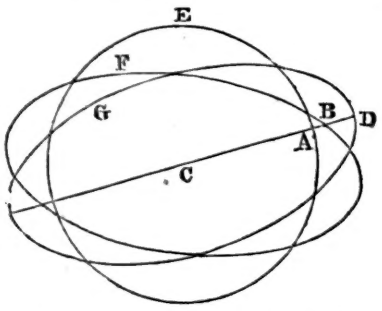
c being a constant. If only one luminary be considered $\frac{1}{R} = \frac{1}{c} - \frac{3mR^2\cos\zeta^2}{2gr^3}$, $R = c + \frac{3mc^2R^2\cos\zeta^2}{2gr^3}$, which is the equation to a spheroid nearly, of which the semi-major axis $= c + \frac{3mc^2R^2}{2gr^3}$, and the eccentricity $= \sqrt{\frac{3mcR^2}{gr^3}}$. The solid content of this spheroid is equal to that of the sphere which the surface of the ocean would assume if the attraction of the luminary were to cease because the mass of water is the same, the solid content of the spheroid is $\frac{4\pi c^3}{3}\left(1 + \frac{3mcR^2}{2gr^3}\right)^3\left(1 - \frac{3mcR^2}{gr^3}\right)$ which (if the radius of the sphere be taken = 1), $= \frac{4\pi}{3}$, π being the ratio of the diameter to the circumference, whence $c = 1 - \frac{mR^2}{2gr^3}$ nearly, and $R = 1 + \frac{mR^2}{2gr^3}(3\cos\zeta^2 - 1)$: this equation is identical with that which

Euler has obtained by a method which is the same in substance. *Principia*, vol. iii. p. 270, line 17, Glasgow edition. But in this investigation the action of the raised water is omitted: its effect is of the same order as that taken into account.

$R = z$, $\cos \zeta = u$, $r = a$, $m = S$, $\frac{g}{R^2} = 1$ in Euler's notation.

If λ be the latitude of the place, and the luminary be in the equator, $\cos \zeta = \cos \theta \cos \lambda$.

The preceding theory (Equations 1 and 2) amounts to supposing, that when the luminaries are in motion these spheroids have a motion round the earth in the same time as the luminary, and such that if the luminaries move in the equator, the major axis of the spheroid passes through the meridian of a given place a given time after the luminary passes through, and that the height of the water above the level which it would have if their attractions should cease, is the sum of the heights due to each spheroid separately. So that if, as in the figure, B F represent a section of the spheroid due to the attraction of the moon by the equator, B G a section of that due to the attraction of the sun, A E a section of the sphere which is such that C A is the mean height of the ocean, the excess of the height of the water above its mean height in any place will be (A B + A D) nearly.



This principle, which is of universal application, is called the principle of the coexistence of small undulations. Thus, when two stones are thrown into a pool of water, the little waves produced by the one are superposed over those produced by the other, without altering their general form, and thus also the form of the ocean, which is produced by the centrifugal force which arises from the rotation of the earth about its axis, may be considered separately and independently of the tides.

Laplace has not determined, even for Brest, the constants λ and λ' which enter into the expression for the time of high water. Not having been able to meet with anything satisfactory on this subject, particularly as regards the port of London, and being unable to procure access to the tables used by those authors who have hitherto calculated tide tables for this port, or indeed any clue to the method which they adopt, and regretting the errors of the tables published last year (which were occasioned principally by the person who then superintended their calculation taking an

erroneous *establishment* of the port of London), the Committee of the Society for the Diffusion of Useful Knowledge were extremely anxious to give accurate tables of the time of high water for the present year. Observations of the tides have been kept by the London Dock Company from the time the Docks were opened, and, upon application to Mr. Solly, the worthy Chairman of that Company, he most kindly procured me access to those documents, and I have been permitted to retain them in my possession for several months.

At my suggestion, observations have also been undertaken at the East India Docks, through the kind interference of Captain Woolmore, under the superintendence of Captain Eastfield. Having obtained the observations which had been kept at the London Docks, I requested Mr. Dessiou to classify them, keeping separate the tides which took place on the several days of the moon's age. Thus Mr. Dessiou formed for each month of the year, as nearly as possible, a column of the times of high water, when the moon was one day old, two days old, &c. These were added together and the mean taken, the times of the moon's southing, or transit over the meridian, corresponding exactly to the same dates, were also taken from the *Nautical Almanac*, and a corresponding mean time of transit found. The difference between the means thus taken gives the mean time which the time of high water follows the moon's passage over the meridian, when the moon's passage takes place at that given time. The following may serve as an example: Mr. Dessiou found from the tide book

TIME OF HIGH WATER.

Years.	Date.	Hours.	Min.	Date.	Hours.	Min.
1802	Jan. 5.	2	40	Jan. 6.	3	35
1803	Dec. 25.	2	25	Dec. 26.	3	5
1804	Jan. 13.	2		Jan. 14.	2	45
1805	Jan. 1.	2	25	Jan. 2.	3	10
1806	Dec. 21.	2	30	Dec. 22.	3	5
1807	Jan. 9.	2	45	Jan. 10.	3	20
1808	Dec. 29.	2		Dec. 30.	2	40
1809	Dec. 18.	1	45	Dec. 19.	2	15
1810	Jan. 6.	2	30	Jan. 7.	3	15
1811	Dec. 26.	1	30	Dec. 27.	2	20
1812	Jan. 14.	2	10	Jan. 15.	2	45
1813	Jan. 3.	2	25	Jan. 4.	3	15
1814	Dec. 23.	2	15	Dec. 24.	3	10
1815	Jan. 11.	2	20	Jan. 12.	2	50
1816	Dec. 31.	2	35	Jan. 1.	3	15
1817	Jan. 17.	2	10	Jan. 18.	3	
1818	Jan. 7.	2	40	Jan. 8.	3	20
1819	Dec. 28.	2	50	Dec. 29.	3	45
1820	Jan. 16.	2	40	Jan. 17.	3	
1821	Jan. 4.	2	50	Jan. 5.	3	25
1822	Dec. 25.	2	25	Dec. 26.	3	10
1823	Jan. 12.	2	30	Jan. 13.	3	10
1824	Jan. 2.	2	25	Jan. 3.	2	45
1825	Dec. 28.	2	10	Dec. 21.	2	40
1826	Jan. 9.	2	40	Jan. 10.	3	20
	Mean . .	2	23	. . .	3	3

I considered only the tides which were observed by day, judging those of the night too uncertain to depend upon. Mr. Dessiou then took the moon's transits on the same days from the *Nautical Almanac*.

MOON'S TIME OF SOUTHING.

Years.	Date.	Hours.	Min.	Date.	Hours.	Min.
1802	Jan. 4.		13	Jan. 5.	1	17
1803	Dec. 25.		37	Dec. 26.	1	36
1804	Jan. 13.		34	Jan. 14.	1	25
1805	Jan. 1.		23	Jan. 2.	1	11
1806	Dec. 21.		24	Dec. 22.	1	12
1807	Jan. 9.		31	Jan. 10.	1	16
1808	Dec. 29,		24	Dec. 30.	1	16
1809	Dec. 18.		57	Dec. 19.	1	55
1810	Jan. 6.		49	Jan. 7.	1	47
1811	Dec. 26.		12	Dec. 27.	1	12
1812	Jan. 14.		6	Jan. 15.	1	4
1813	Jan. 3.		39	Jan. 4.	1	32
1814	Dec. 23.		34	Dec. 24.	1	22
1815	Jan. 11.		44	Jan. 12.	1	31
1816	Dec. 31.		46	Jan. 1.	1	37
1817	Jan. 17.		2	Jan. 18.		56
1818	Jan. 7.		37	Jan. 8.	1	37
1819	Dec. 28.		1	Dec. 29.	2	4
1820	Jan. 16.		55	Jan. 17.	1	53
1821	Jan. 4.		17	Jan. 5.	1	15
1822	Dec. 25.		51	Dec. 26.	1	43
1823	Jan. 12.		7	Jan. 13.		54
1824	Jan. 2.		12	Jan. 3.		54
1825	Dec. 20.		3	Dec. 21.		55
1826	Jan. 9.		4	Jan. 10.		56
	Mean . .		26	. . .	1	22

Whence I concluded that in January, when the moon passes the meridian at 26 minutes, the high tide takes place in the London Docks at 2 hours 23 minutes, and follows the moon's southing 1 hour 57 minutes, and when the moon passes the meridian at 1 hour 22 minutes, the high water takes place at 3 hours 3 minutes, and follows the moon's southing 1 hour 41 minutes; hence, by interpolation, I concluded, that if the moon had passed the meridian at 1 hour, the moon's passage would have preceded the time of high water by 1 hour 47 minutes.

In this manner the table was formed which is given p. 66.

Owing to the influence of rain, and other accidental causes, this method is more than sufficiently exact for our purpose, but if the observations were much more accurate and the constants were known approximately, the well known method of indeterminate coefficients would be more correct. The observations from which this table was formed were above 9000 in number, including a complete revolution of the moon's nodes.

I shall now explain the manner in which the constants λ λ', &c. were determined from the last column which is headed mean in the table, p. 66.

First, we observe that the differences between the time of the tides at the n^{th} and $12+n^{th}$ hour are too small and too irregular to

be worth notice: I, therefore, took the mean of the tides corresponding to the passages of the moon over the meridian at 0 and 12, 1 and 13, 2 and 14, &c. in order to form the column underneath. It is obvious, from the form of equation (2), that the mean of this column (see that headed "Mean") = 1 hour 32 min. = λ' nearly.

It is also evident, from the same expression, that $\lambda - \lambda'$ = the distance of the sun from the moon when this mean tide takes place, which is 2 hours, $\frac{m\ P^3}{m'\ P'^3}$ is found from the time when the high-water takes place, when $2\theta - 2\theta' - 2\lambda + 2\lambda' = 90°$, that is, when the moon passes the meridian at 5 hours; thus

$$\text{tan. } 2\theta' - 2\lambda' = 9{\cdot}52452 = \frac{m\ P^3}{m'\ P^3}$$

neglecting the influence of the declinations of the luminaries, which cannot affect the result, considered as a mean of so many thousand observations.

Mr. Dessiou was prevented by other occupations from completing this Table until the Almanac was already printed; therefore, in calculating the times of high-water for next year, he was obliged to make use of the following values of the constants, which I had determined approximately for the London Docks.

$\lambda - \lambda' = 2$ hours.
$\lambda' = 1$ hour, 29 minutes.

The Table he made use of is printed in the Almanac.

The mean value of $\frac{m}{m} \cdot \frac{P^3}{P'^3}$ was taken $= \frac{1}{2{\cdot}6167}$, as determined by Laplace, from the observations made at Brest.—*Mémoires de l'Académie*, 1818, p. 53.

If, according to Laplace, *Exposition du Système du Monde*, p. 23, $P' = 10661''$, or $57'.34''.1$ sex., $P = 8''.54$, if, according to the mean of these observations, log. $\frac{m}{m'} \cdot \frac{P^3}{P'^3} = 9{\cdot}52452$, and if the mass of the earth be the $\frac{1}{354936}$ of the sun, *Exp. du Système du Monde*, p. 209, the mass of the moon is $\frac{1}{61.1}$ that of the earth, according to this method of determining it.

The proportion of the mass of the moon to the earth which agrees with the Theory of the Precession of the Equinoxes, and which is adopted by M. Damoiseau in his Theory of the Moon, is $\frac{1}{75}$.

If $\frac{m}{m'} \cdot \frac{P^3}{P'^3} = \frac{1}{2.6167}$, as determined by Laplace from the obser-

vations at Brest, the mass of the moon is found to be $\frac{1}{69.79}$ that of the earth.

The discrepancy of these results, when compared with the mass of the earth, is $\frac{1}{490}$ of that mass, but if the observations be considered merely as giving the ratio of the mass of the moon to that of the sun, then if $\frac{m}{m'}\cdot\frac{P^3}{P'^3}$ = the number of which the logarithm is 9·52452, $\frac{m}{m'} = \frac{1}{21688000}$.

If $\frac{m}{m'}\cdot\frac{P^3}{P'^3} = \frac{1}{2{\cdot}6167}$, $\frac{m}{m'} = \frac{1}{24770000}$, the difference of these determinations is only $\frac{1}{174300000}$ the mass of the sun.

We have supposed the parallaxes of the sun and moon to be known, but this is not necessary in order to deduce from the observations of the tides the ratio of the mass of the moon to that of the earth. In fact, by the beautiful extension of the third law of Kepler, which is due to Sir Isaac Newton,

If m'' be the mass of the earth, $\frac{m+m''}{m'+m''}\cdot\frac{r'^3}{r^3}$ is nearly equal to the ratio of the squares of the periodic times of the moon about the earth, and of the earth about the sun, or of their mean motions. This ratio is known very accurately, by astronomical observations, to be ·0748013. Hence neglecting m'' with regard to m, we have $\frac{m}{m+m''}\cdot\frac{r'^3}{r^3} = (\cdot0748013)^2$.

If log. $\frac{m}{m'}\cdot\frac{r'^3}{r^3} = 9{\cdot}52452$,

$$\frac{m'}{m'+m''} = \frac{1}{59{\cdot}80}.$$

If log. $\frac{m}{m'}\cdot\frac{r'^3}{r^3} = 9{\cdot}5822461$, according to Laplace's determination from the observations at Brest,

$$\frac{m'}{m'+m''} = \frac{1}{68{\cdot}32}.$$

		hours.
9·52452 is the log. tangent of	18° 33′ nearly, or	1.14′.
9·58224 „ „	20° 55′ „	2.22′.

Hence we see that, in this method of determining the mass of the moon, a difference of 4′ in the difference of the interval which the

passage of the moon over the meridian precedes the time of high-water, when the mean tide takes place (which corresponds in the Table to the time when the moon passes the meridian at 2 hours, or when her angular distance from the sun is 30°), and the interval which the passage of the moon over the meridian precedes the time of high water when her angular distance from the sun is increased by 45°, gives a difference of $\frac{1}{490}$ in the determination of the ratio of the mass of the moon to that of the earth.

Laplace, after giving $\frac{1}{69}$ for the mass of the moon as determined from the observations of the tides at Brest, says, "En considérant la petitesse des quantités qui m'ont servi à déterminer l'accroissement de l'action lunaire, et en réfléchissant que ces quantités sont du même ordre que les petites erreurs dont l'application du principe de la co-existence des ondulations très petites aux phénoménes des marées est susceptible; je n'ose garantir l'exactitude de cette valeur de la masse lunaire, et j'incline à penser que les phénomènes astronomiques sont plus propres à la fixer."

The preceding remarks are contained in the volume of the Mémoires de l'Académie for 1818. In the Méc. Cél., vol. v., p. 206, Laplace again determines, from more numerous observations of the heights of the tides at the time of high-water, the value of $\frac{m}{m'} \cdot \frac{r'^3}{r^3} = \frac{1}{2{\cdot}35333}$, which gives the ratio of the mass of the moon to that of the earth to be $\frac{1}{74{\cdot}946}$. Laplace has not given the observations of the times of high-water at Brest in such a way that it would be possible to apply to them the method which I have adopted here, and Mr. Dessiou has not been able to complete the classification of the observations of the heights observed at the London Docks, which is necessary, to enable me to compare them with theory; but it will be extremely interesting to observe hereafter, whether the constants, as determined from the observations of the heights, agree with those which I have determined from the intervals, and this I propose to do at some future opportunity.

The effect of the change in the sun's declination is clearly perceptible in the Table, p. 66 and 67, but the error which arises from neglect of this circumstance in calculating the times of high water for next year is of no moment, for the tide is not observed at the London Docks to within ten minutes, independently of the variations which are occasioned by falls of rain on the river, the effect of which it will be difficult to predict.

The time in the register of the tides is seldom even given to within five minutes. The variation in the height of the water just

before high-water as in all quantities which are near to a maximum, is almost insensible, so that it is extremely difficult to determine exactly the instant of high-water. At the London Docks the observations are made by the watchman, who observes when the tide begins to fall or has made its mark, but there is no floating guage, and the ripple of the water in the dock must prevent accuracy. The time is taken from the clock of Rotherhithe church, which is within sight on the opposite bank of the River Thames.

At the St. Katherine's Docks the observations are made with about equal precision; here, however, the lock-gate is only graduated in feet, the subdivision being left to the eye of the observer. At the East India Dock there is a floating guage, which is placed in a chamber connected with the Dock, but, unfortunately, in the way of the capstan, so that it has generally to be removed exactly at the point of high tide. Here the ripple is got rid of, but the construction of the guage is extremely rude, and the time of high water cannot, I think, in general be obtained to within five minutes. In order to observe the time of high water to a minute, it would be necessary to have a rod accurately divided, floating in a chamber connected with the ocean. This moveable rod should slide with friction wheels against a fixed rod carrying a vernier. The whole should be encased to preserve it from the weather, having a small door, or glazed aperture immediately over that part which is occupied by the vernier. The chronometer should be placed close to the vernier, so that the eye of the observer may embrace both at the same time; the height of the tide must be noted every minute for a short time previous to the time of high water. A little experience will teach the observer how soon it is necessary to begin, in order not to risk the loss of the observation of high water, supposing the time to be known approximately from tables calculated for the place. Laplace says, "Il est temps enfin d'observer ce genre de phénomènes avec autant de soin que les phénomènes astronomiques."—*Mémoires de l'Académie*, 1818, p. 2.

I trust that our Government will be induced to direct observations of the tides to be made with accuracy in all the institutions at the ports which are under its control. Such observations would be extremely useful in rectifying the table which is given in the *Almanac*, p. 6, for the accuracy of which we are at present unable to vouch. The error in the establishment of the port of London, as usually given, has much weakened my confidence in these determinations, which probably vary with the lapse of years. The time of high water at the new and full moon at the London Docks is now 2 hours 2 minutes, adding 10 minutes for London Bridge, we have 2 hours 12 minutes. The *Annuaire du Bureau des Longitudes* gives 2 hours 45 minutes, and Mackay's *Complete Navigator* 3 hours 22 minutes. The removal of the present London Bridge will probably much affect the tides below London Bridge, but it is difficult to say what precise change will take place.

In order to ascertain the effect of the different winds in accelerating or retarding the time of high water, I calculated all the times of high water for the year 1826, and I requested Mr. Dessiou to classify the tides observed in that year according to the different winds, which are noted against every observation in the register: the result was as follows:—

Direction of Wind.	Number of Tides observed	Sum of Times of High Water.				Mean Error.	
		Observed.		Calculated.			
		Hrs.	Min.	Hrs.	Min.	Hrs.	Min.
N.	38	221	50	221	43		0
N. N. E.	52	297	5	301	41	+	5
N. E.	82	390	10	391	5	+	1
E. N. E.	44	248	55	245	23	−	5
E.	42	196	45	192	24	−	6
E. S. E.	14	87	10	85	34	−	7
S. E.	23	125	5	125	46	+	2
S. S. E.	19	140	47	140	2	−	2
S.	29	208	30	210	38	+	4
S. S. W.	37	266	45	271	7	+	7
S. W.	147	749	50	745	9	−	2
W. S. W.	57	356	30	360	48	+	5
W.	38	262	10	266	35	+	7
W. N. W.	11	75	10	76	0	+	5
N. W.	37	202	20	209	47	+	12
N. N. W.	35	217	45	220	9	+	4

It would appear from this table that the direction of the wind does not much affect the time of high water. Flamsteed says (*Philosophical Trans.* vol. xiii.), "When by reason of great droughts in summer, or extreme frosts in winter, the springs are low and the fresh waters less than usual, the tides may hold up longer than the times noted in the table; also when strong north-westerly or northerly winds blow, which bring in an extraordinary flood from the northern seas, and keep it up longer than other times; so, on the contrary, when the winds blow hard on the opposite points of the compass, or when we have much rain and great freshes, the tides hold not out so long as the times shewn in the table, the freshes overpowering and checking them sooner, yet have I never found that the difference between the calculated and observed high waters have much exceeded half an hour—most commonly they are scarce half so much." Mr. Epps makes similar remarks at the foot of his table of the times of high water: I presume, therefore, that there is some truth in them; probably falls of rain on the river (great freshes) have more effect than changes in the wind. Is it to this circumstance that the variation in the values of λ and λ' at different seasons is to be attributed? See table p. 66.

I have thus endeavoured to exhibit and to explain the phenomena of the tides: I shall now, in conclusion, merely call attention to the coincidence which is presented between theory and observation, and for this purpose I have formed the following table, which gives the mean of the times of high water, de-

duced from the observations as explained in p. 58, and also the times calculated, upon the supposition that—

$\lambda' = 1$ hour 32 min. $\lambda - \lambda' = 2$ hours, $\log \frac{m}{m'} \frac{P^3}{P'^3} = 9{\cdot}52452$.

See p. 67, column headed Mean.

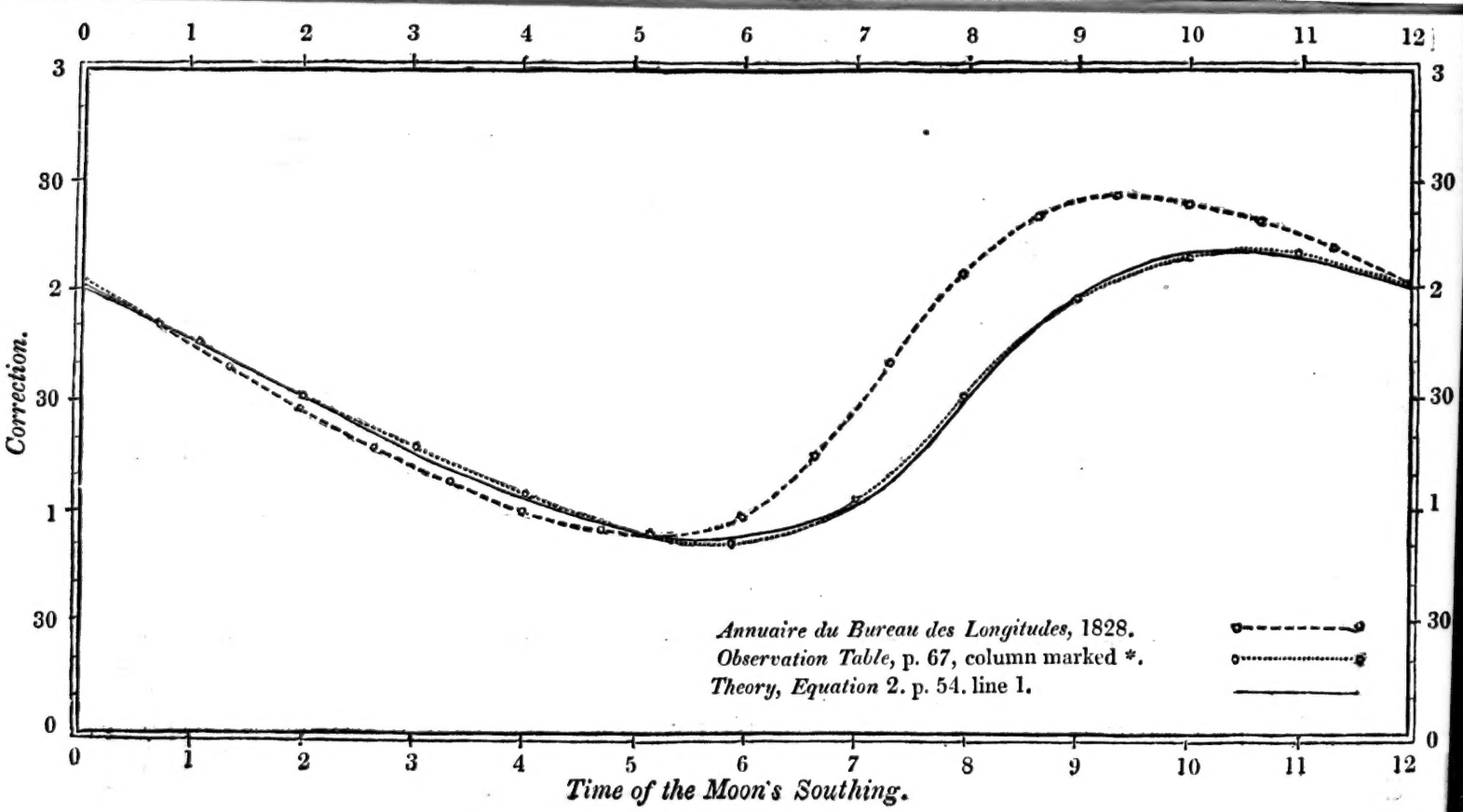
Time of Moon's Southing.	Time that the Moon's Southing precedes the Time of High Water.			
	Observed.		Calculated.	
Hrs.	Hrs.	Min.	Hrs.	Min.
0	2	2	2	0
1	1	47	1	47
2	1	32	1	32
3	1	18	1	17
4	1	5	1	4
5	0	55	0	55
6	0	52	0	54
7	1	3	1	6
8	1	32	1	32
9	1	59	1	58
10	2	9	2	10
11	2	10	2	9

In order to render still more evident the coincidence between theory and observation I have drawn a diagram, p. 65, representing the correction, or addition, which is to be applied to the time of the moon's southing, in order to have the time of high water at different times of her age, which is nothing more than a graphical illustration of the preceding table, and must not be considered of use further than in affording facility to those who are not accustomed to mathematical calculations. The correction given by the table in the *Annuaire du Bureau des Longitudes* is also laid down. This figure shews clearly how important it is to determine accurately the constant $\lambda - \lambda'$; an error in this quantity has an effect upon the calculated times of high water similar to that which an error in the longitude of the epoch, or in the longitude of the perihelion, has in the place of a planet; and it is this which would render the table of the *Annuaire* inapplicable to our port, without modification, as the mean error amounts, in many cases, to as much as half an hour.

The results which I have obtained present a very remarkable coincidence between theory and observation, and also a very striking illustration of that beautiful theorem in the science of probability, which is due to Bernouilli, shewing that inequalities, whose period is not the same as that according to which observations are ordained, disappear if a sufficient number be examined.

J. W. Lubbock.

The time of high water in the British Almanac was computed by Mr. Dessiou for the London Docks, in apparent time: this precedes the time of high water at London Bridge about ten minutes.


0 1 2 3 4 5 6 7 8 9 10 11 12
3
30
2
30
1
30
0
Correction.
Annuaire du Bureau des Longitudes, 1828.
Observation Table, p. 67, column marked *.
Theory, Equation 2. p. 54. line 1.
Time of the Moon's Southing.

Time of ☽'s Passage through the Meridian.	Time which the Moon's Passage through											
	Jan., *q. p.*		Feb., *q. p.*		Mar., *q. p.*		April, *q. p.*		May, *q. p.*		June, *q. p.*	
H.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.
0	2	5	2	16	2	9	2	8	2	10	1	58
1	1	47	2	2	2	0	1	54	1	49	1	38
2	1	36	1	55	1	43	1	35	1	30	1	21
3	1	22	1	42	1	28	1	16	1	13	1	8
4	1	22	1	31	1	11	0	57	0	56	1	1
5	1	20	1	18	0	51	0	34	0	45	0	56
6	1	21	1	14	0	37	0	29	0	48	1	8
7	1	28	1	17	0	47	0	35	1	11	1	37
8	1	49	1	42	1	14	1	11	1	48	1	54
9	2	7	2	10	1	32	1	53	2	16	2	13
10	2	9	2	22	1	56	2	9	2	20	2	22
11	2	14	2	20	2	1	2	8	2	16	2	13
12	2	7	2	20	1	57	1	56	2	8	1	59
1	1	51	2	6	1	46	1	38	1	41	1	44
2	1	39	1	56	1	30	1	19	1	31	1	33
3	1	34	1	40	1	11	0	59	1	5	1	19
4	1	28	1	28	0	50	0	40	0	50	1	7
5	1	18	1	12	0	34	0	24	0	40	1	7
6	1	15	1	2	0	22	0	25	0	49	1	17
7	1	22	1	11	0	23	0	38	1	10	1	36
8	1	47	1	39	0	51	1	14	1	44	1	56
9	2	11	2	5	1	36	1	52	2	9	2	4
10	2	11	2	19	1	58	2	5	2	14	2	13
11	2	20	2	23	1	59	2	1	2	9	2	9
Mean.	1	44	1	48	1	21	1	20	1	33	1	38
0	2	6	2	18	2	3	2	2	2	9	1	58
1	1	49	2	4	1	53	1	46	1	45	1	41
2	1	38	1	55	1	36	1	27	1	30	1	27
3	1	28	1	41	1	20	1	8	1	9	1	13
4	1	25	1	29	1	0	0	48	0	45	1	4
5	1	19	1	15	0	42	0	29	0	42	1	1
6	1	18	1	7	0	30	0	27	0	48	1	12
7	1	25	1	14	0	35	0	36	1	10	1	32
8	1	48	1	40	1	3	1	12	1	46	1	55
9	2	9	2	7	1	34	1	52	2	12	2	9
10	2	10	2	21	1	57	2	7	2	17	2	17
11	2	17	2	31	2	0	2	4	2	12	2	11
$\lambda' =$	1	44	1	48	1	21	1	20	1	33	1	38
$\lambda - \lambda' =$	1	27	2	30	2	56	2	22	1	48	1	13

the Meridian precedes High Water.

July, *q. p.*		Aug., *q. p.*		Sept., *q. p.*		Oct., *q. p.*		Nov., *q. p.*		Dec., *q. p.*		Mean.	
H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.
1	28	2	4	2	13	2	1	2	2	2	2	2	3
1	35	1	50	2	2	1	44	1	46	1	34	1	48
1	32	1	41	1	48	1	29	1	26	1	17	1	34
1	22	1	31	1	30	1	9	1	6	1	0	1	19
1	15	1	23	1	15	0	48	0	50	0	50	1	8
1	15	1	21	1	4	0	34	0	40	0	42	0	57
1	20	1	13	0	54	0	21	0	36	0	48	0	54
1	36	1	19	1	2	0	24	0	53	1	9	1	5
1	51	1	37	1	30	1	4	1	29	1	28	1	33
2	10	2	0	2	2	1	36	1	57	1	54	1	59
2	20	2	17	2	13	1	55	2	10	1	59	2	11
2	18	2	20	2	21	2	8	2	10	2	1	2	12
1	55	2	8	2	13	1	52	1	56	1	44	2	1
1	52	1	51	1	57	1	35	1	38	1	32	1	46
1	39	1	40	1	39	1	13	1	20	1	17	1	31
1	32	1	27	1	22	0	57	1	5	1	8	1	17
1	20	1	16	1	5	0	37	0	51	0	29	1	3
1	21	1	11	0	44	0	23	0	47	0	55	0	53
1	20	1	3	0	41	0	17	0	49	0	57	0	51
1	33	1	6	0	37	0	21	1	11	1	21	1	2
1	51	1	29	1	27	1	3	1	44	1	44	1	32
2	9	1	57	2	2	1	37	2	7	2	4	1	59
2	16	1	59	2	11	1	56	2	9	2	3	2	8
2	12	2	9	2	13	1	58	2	8	2	1	2	8
1	43	1	40	1	35	1	13	1	27	1	26	1	32
1	42	2	6	2	13	1	56	1	59	1	53	*2	2
1	44	1	50	2	0	1	40	1	42	1	33	1	47
1	36	1	40	1	43	1	21	1	23	1	17	1	32
1	27	1	29	1	26	1	3	1	5	1	4	1	18
1	17	1	19	1	10	0	42	0	51	0	54	1	5
1	18	1	16	0	54	0	29	0	43	0	49	0	55
1	20	1	9	0	47	0	19	0	43	0	52	0	52
1	34	1	12	0	50	0	23	1	2	1	15	1	3
1	51	1	31	1	28	1	4	1	37	1	36	1	32
2	9	1	58	2	2	1	36	2	2	1	59	1	59
2	18	2	8	2	12	1	56	2	9	2	1	2	9
2	15	2	14	2	17	2	3	2	9	2	1	2	10
1	42	1	40	1	35	1	13	1	27	1	26	1	32
1	13	2	0	2	28	2	27	1	47	1	26	2	0

X. NATURAL HISTORY OF THE WEATHER.

ARE you *weather-wise?* is a question often anxiously asked, when all the appointments and arrangements for the out-door happiness of a large party have been made, and every desirable object anticipated or secured, except the certainty of fine weather, or even a continuation of it, if it already exist. The tone of the answers to this important query is in general expressive of hope of what it might, rather than of confidence as to what it will, be. The same desire of information and the same uncertainty prevail in the deliberations upon the more important and extensive operations of man, wherever the action of the atmospheric agents may assist or interfere; so that the cunning cheat, who could make a parade of abstruse learning sufficient to mystify the uninformed, has, for centuries, found the sale of predictions as to the state of the weather an abundant source of profit. "Quackery," to use the recent language of M. Bory de St.Vincent, "has too long abused the public credulity upon this subject; for it must be acknowledged, that these phenomena are connected with a train of agencies, whose very existence we can never appreciate, and whose powers are beyond our means of calculation." Still by the light which has been thrown upon the operations of this part of nature by the philosophers of our own times, we can safely take some steps towards an acquaintance with those atmospheric changes which directly or indirectly affect all vegetable and animal life, and more particularly with the order in which they succeed each other. Provided with this knowledge, we may often be able to anticipate them, and timely prepare, either to avert or diminish their injurious influence, or take the greatest advantage of opportunities which may be propitious to the increase of the subsistence, wealth, and happiness of the community.

In the attempt to form a correct notion of the causes which produce those incessant variations in the atmosphere which are popularly called the *weather*, it will be necessary to consider, briefly, some of the properties and constituent parts of that wondrous envelope of our globe*.

CONCISE VIEW OF THE PROPERTIES AND CONSTITUTION OF THE ATMOSPHERE.

That the atmosphere is a fluid completely surrounding the whole earth needs no demonstration; how far its *dimensions* ex-

* It would be extremely difficult, in an article which involves so great a number of facts and opinions, to assign an individual authority to each of the following statements. It is, therefore, proper to mention, that the authors who have been principally consulted for this abridgment of a very extensive and complicated subject, are these:—

Daniell, J. F., Esq., F.R.S.—"Meteorological Essays and Observations." 2nd. edit.

Leslie, Professor.—Articles "Climate" and "Meteorology," in the Supplement to the Encyclopedia Britannica; and "On Heat and Moisture."

Forster, Thos., Esq.—Article "Cloud," in Supplement to Ency. Brit.

Howard, Luke, Esq.—"Nomenclature and Observations on Clouds."

Bory de St. Vincent.—Article "Météores," in Dict. Class. d'Hist. Naturelle.

Harvey, G., Esq.—"On the Formation of Mists," in Brande's Journal. 1823.

Davy, the late *Sir H.*—Phil. Trans. 1819.

tend into space is a problem of far more difficult solution. Had it been a fluid of uniform density, the length of the mercurial column suspended in the barometer, would have demonstrated that its greatest elevation could not have exceeded five miles; but the air being very elastic, the higher portions of the mass which covers our globe, sustaining a diminished pressure, must swell upwards, and occupy a proportionably wider space. This property removes the boundary of the atmosphere to a much higher elevation; and from the consideration that the reflection of the sun's rays, unless the sky be overcast, is constant, so that there is total darkness in no climate, even at midnight, it has been inferred, that the elevation of the atmosphere must, at least, be equal to 1538 miles. This very great extension of a rare expansive atmosphere appears conformable to the general phenomena. Near the equator it may stretch out even much further, and yet its elevation can never exceed a certain absolute limit. Though this extreme boundary may surpass all our ordinary conceptions, it yet scarcely exceeds the twentieth part of the distance of the moon, which was held by the ancients to communicate with our atmosphere.

Though we can sound the depths of this great aërial ocean but approximately, we are not so situated with regard to its *weight.* This property has been long demonstrated to exist, and even those differences of pressure upon the earth, its supporting surface, which must attend the fluctuations of a body of such attenuated fluidity perpetually agitated, can be measured and compared.

To the properties of magnitude and weight must be added those of *elasticity*, *expansibility*, *transparency*, and *insipidity*.

Air is also generally considered to be invisible, but it is certain that, like water, it is a coloured fluid; it is naturally blue, as that of the latter is green, but both colours acquire intensity only from the depth of the transparent mass. This we perceive in air, on viewing distant objects, whose colours are always tinted by the deepening hues of the interjacent range of atmosphere. The remotest hills seem lost in a cerulean vesture. The blending of the atmospheric azure with the colours of the solar rays, produces those compound, and sometimes remarkable, tints with which the sky and clouds are emblazoned.

The constitution of the rare medium in which we "live, and move, and have our being," has been unfolded by the brilliant discoveries of modern chemistry. Experiments have been made at distant points, repeated on the summits of the loftiest mountains, and applied to portions of air brought down by balloons from the altitude of five miles; and the result has been the conclusion, that the constitution of our atmosphere is the same in all places on the surface of the earth, and at every elevation that has yet been explored. It appears to consist of a combination of two distinct expansible gases, the interstices of which are penetrated by ever-varying proportions of condensible elastic vapour. The gases are combined in different quantities, a single portion of oxygen being united to three parts by weight, or four parts by bulk, of

nitrogen; there is also a very slight admixture of carbonic acid gas, amounting to, perhaps, a thousandth part of the whole. The particles of the condensible elastic vapour or steam are invisible, and insinuate themselves between the particles of air, and filter through them with as little union, but with a similar kind of retardation, as those of water ascend and diffuse themselves through a sponge. These distinct atmospheres of air and vapour thus mechanically mixed, have different relations to heat, and their states of equilibrium, when enveloping a sphere of unequal temperature, are incompatible with each other.

The triple assemblage is constantly exposed to the action of *heat*, a principle scarcely known but by some of its properties, which, combining with all bodies, even the most dense, either enlarges their bulk, or, dissolving the tie which holds their atoms in a solid form, sets them loose in fluidity, or finally expands them into vapour, and removes the seat of their existence from the earth to the heavens. The quantity of heat absolutely present in any one place is extremely difficult to measure; but its fluctuations are perpetual, and often evident. And as every accession or diminution of temperature is accompanied by some change, and often more than one, in the integral parts of bodies, or in the relation of one body to others which may be contiguous, it follows that these changes are infinite in number and character, and that the agent which produces them may be considered the main-spring of all the grand movements in the atmosphere.

The atmosphere, so compounded, may be considered a universal solvent, and though itself *inodorous*, it is the medium of all smells, and dissolving the different odorous effluvia, is charged with the emanations of all the various substances it sweeps.

There is still to be added to this enumeration of the ingredients of this astonishing compound, the subtle and mysterious agencies of light, and of the electric, galvanic, and magnetic fluids; and last, as if to baffle all inquiry, and render analysis impossible, there is, in universal operation, a perpetual agitation and commixion of the whole mass.

When we reflect upon this ever-agitated heterogeneous fluid, compounded of the most active elements of life and destruction, constantly combining,—separating, now evident to the most ordinary sense, now escaping the grasp of imagination, we cannot, rationally, be surprised at the little, comparatively, that is really known concerning it. All within the power of the most ardent student is to collect the few facts that are established, to dismiss conjecture and hypothesis, and to apply himself to make additions to our knowledge by carefully observing, and accurately and luminously describing, the processes during which he is permitted to be present.

"By invisible, but ever-active agencies, the waters of the deep are raised into the air, whence their distribution follows, as it were by measure and weight, in proportion to the beneficial effects which they are calculated to produce. By gradual, but almost insensible, expansions the equipoised currents of the atmosphere are disturbed, the stormy winds arise, and the waves of

the sea are lifted up; and that stagnation of air and water is prevented which would be fatal to animal existence. But the force which operates is calculated and proportioned; the very agent which causes the disturbance bears with it its own check, and the storm, as it vents its force, is itself setting the bounds of its own fury."*

It is evident, from a slight view of these "complicated and beautiful contrivances," that it is hopeless to expect that all the causes of the phenomena of the atmosphere will ever be entirely attained by human science. At present but few are known, and those imperfectly. Amongst the principal ones which most affect the subject of our present inquiry are, undoubtedly, heat and electricity. The first raises and suspends the evaporated waters invisibly in the air, until some more powerful attraction dissolves the union, and the deserted moisture, exposed to view, falls again to the earth, and revisits it in the varied forms of clouds, mist, rain, dew, snow, hail, sleet, and hoar-frost. To electricity may be principally attributed the more splendid phenomena of lightning, the aurora-borealis, and the other igneous meteors. And the effect of these causes, variously combined and infinitely modified by other agents, is felt in those currents of atmospheric air, which are described by a sacred writer, as "going toward the north, and toward the south, as whirling about continually and returning again according to their circuits."

Imperfect as the preceding sketch necessarily is, it is founded on facts which have been collected by some of the most indefatigable observers, and faithful historians of what they saw. While it enables us to judge a little more correctly, perhaps, of some of the causes of those conditions of our atmosphere, which are hourly presenting themselves to our view, or affecting the state of our existence, it cannot but excite emotions of astonishment and of pity, when we see some of the most ignorant of our species boldly pretending to predict the results of the operations, visible and invisible, near and remote, of this vast and complex and almost unknown apparatus.

We shall present a contrast to the dicta of these daring empirics, by an extract from the recent publication of a gentleman,† highly distinguished by the services he has rendered meteorology, which contains a few of the most general and best authenticated facts relating to the phenomena of the atmosphere. From these we may safely reason; and a knowledge of them may frequently enable us to detect order and regularity among objects proverbially spoken of as uncertain and irregular.

Some of the more particular Phenomena of the Atmosphere of the Earth.

"The mean height of the barometer (i. e. the mean weight or pressure of the atmosphere) at the level of the sea, is the same in every part of the globe.

* Daniell. † Ibid. Essays.

"The barometer constantly descends in a geometrical progression for equal ascents in the atmosphere, subject to a correction for the decreasing temperature of the elevation.

"The mean temperature of the earth's surface increases gradually from the poles to the equator.

"The mean temperature of the atmosphere decreases from below upwards in a regular gradation.

"The barometer at the level of the sea is but slightly affected by the annual or diurnal fluctuations of temperature; but, in the higher regions of the atmosphere, is, on the contrary, greatly affected by them.

"The heating and cooling of the atmosphere, by the changes of day and night, take place equally throughout its mass.

"The average quantity of vapour in the atmosphere decreases from below upwards, and from the equator to the poles.

"The western coasts of the extra-tropical climates have a much higher mean temperature than the eastern coasts.

"A wind generally sets from the sea to the land during the day, and from the land to the sea during the night, especially in hot climates.

"Between the tropics the fluctuations of the barometer do not much exceed one quarter of an inch, while, beyond this space, they reach to three inches.

"In the temperate climates the rains and the winds are variable.

"As we advance towards the Polar Regions, we find the irregularities of the wind increased; and storms and calms repeatedly alternate, without warning or progression.

"In the extra-tropical climates, a fall in the barometer almost always precedes a period of rain, and indicates a change or acceleration of the aërial currents.

"Barometers, situated at great distances from each other, often rise and fall together with great regularity.

"More than two currents may often be traced in the atmosphere at one time, by the motions of clouds, &c.

"The force of the winds does not always decrease as the elevation increases; but, on the contrary, is often found to augment rapidly.

"The variations of the barometer are less in high situations than in those at the level of the sea.

"In Great Britain, upon an average of ten years, westerly winds exceed the easterly in the proportion of 225 to 140; and the northerly winds exceed the southerly, as 192 to 173.

"Northerly winds almost invariably raise the barometer, while southerly winds as constantly depress it.

"The most permanent rains from this climate come from the southern regions.

"The mean height of the barometer varies but little with the changes of the seasons.

"The apparent permanency and stationary aspect of a cloud is often an optical deception, arising from the solution of moisture on one side, and its precipitation on the other.

"The quantity of vapour in the atmosphere in the different seasons of the year (measured on the surface of the earth, and near the level of the sea) follows the progress of the mean temperature.

"The pressure of the aqueous atmosphere, separated from that of the aërial, generally exhibits directly opposite changes to the latter.

"Great falls of the barometer are generally accompanied by a temperature above the mean for the season, and great rises by one below the same."

The same authority also states, that "The British islands are situated in such a manner as to be subject to all the circumstances which can possibly be supposed to render a climate irregular and variable. Placed nearly in the centre of the temperate zone, where the range of temperature is very great, their atmosphere is subject, on the one side, to the impressions of the largest continent of the world; and, on the other, to those of the vast Atlantic Ocean. Upon their coasts the great stream of aqueous vapour, perpetually arising from the western waters, first receives the influence of the land, whence emanate those condensations and expansions which deflect and reverse the grand system of equipoised currents. They are, also, within the frigorific effects of the immense barriers and fields of ice, which, when the shifting position of the sun advances the tropical climate towards the northern pole counteract its energy, and present a condensing surface of enormous extent to the increasing elasticity of the aqueous atmosphere." Amidst all the uncertainty and seeming confusion arising from this complication, general principles may still be recognised, and it is believed the more they are studied, the more obvious they will appear.

Evaporation.

The formation and never failing supply of the condensible elastic vapour, which has been described to be one of the constituents of the atmosphere, is provided for by that law of nature which has endued water, under all circumstances, even when congealed into ice, with the power of emitting vapour or steam, in a quantity proportioned to its temperature. The presence of water over the globe may be said to be universal; for even in the fraction which is estimated to be land, it is so profusely distributed as to maintain a perpetual exhalation. "Pasturage, corn-fields, or forests support a continual evaporation, augmented only by the dryness of the air, and the rapidity of its sudden contacts. Even ploughed land will supply as much moisture to the exhaling fluid as an equal sheet of water. It is only when the ground is quite parched, that it ultimately retains its latent store *." As this property of water clings to it in all its metamorphoses, and attends it in all its localities, it follows that the process of evaporation is constant and universal. It is generally also invisible, but there are times when it may be seen, and we can inspect, at the level of the earth, some of those operations which usually take place in the higher regions of the atmosphere. In the calm evening of a fine summer's day, the rudiments of future clouds

* Leslie.

often present themselves to our sight, in the first part of their flight; and though they disappear, it is no proof of the suspension, or even of the diminution, of the process, which proceeds as powerfully and effectually during the most brilliant aërial transparency as in the thickest mist.

By means of the visibility which cold imposes upon aqueous vapour, we can often satisfactorily trace its upward progress in the clouds of fine weather. "During the heat of the day it rises from the surface of the land and waters, and reaches its point of condensation in greater or less quantities at different altitudes. Partial clouds are formed in different parallel planes, which always maintain their relative distances. The denser forms of the lower strata, as they float along with the wind, shew that the greater abundance of precipitation has been at the first point of deposition, while the feathery shapes and lighter texture of the upper attest a rarer atmosphere. These clouds do not increase beyond a certain point, and often remain stationary in quantity and figure for many hours; but, as the heat declines, they gradually melt away, till at length, when the sun has sunk below the horizon, the ether is unspotted and transparent. The stars shine through the night with undimmed lustre, and the sun rises in the morning in his brightest splendour. The clouds again begin to form, increase to a certain limit, and vanish with the evening shades. This gradation of changes which we see so often repeated in our finest seasons may at first seem contrary to the true principles; and the precipitations which occur with an *increase* of temperature, and disappear with its *decline*, may, without reflection, be regarded as diametrically opposed to correct theory. But a little consideration will shew that such conclusions would be untrue. The vapour rises, and is condensed; but in its descent falls into a warmer air, where it again is evaporated, and becomes invisible; and as the quantity of evaporation from the surface of the earth is exactly equal to supply this process above, the cloud neither augments nor decreases. When the sun declines, the ground cools more rapidly than the air; evaporation decreases, but the dissolution of the cloud continues. The supply at length totally ceases, and the cloud subsides completely away. The morning sun revives the exhalations of the earth, the process of their condensation and consequent cloud-like form commences, and they again undergo the same series of changes*."

Descending again to the operations on the earth's surface we may observe that the ascent of the aqueous vapour is modified by the relative differences of the temperatures of the exhaling fluid and the ambient air. Two of these it may be useful to describe. They are,

1. When the temperature of the fluid is *above* that of the air;
2. When the temperature of the fluid is *below* that of the air.

In the first case, the evaporation is proportionate to the difference of temperature. The gaseous fluid in contact with the surface of the warmer water becomes lighter by receiving portions of the excess of heat, and, rising up, carries with it in its ascent the entangled vapour, which has been cooled down by the low temperature

* Daniell.

of the air into the form of steam. This is the visible evaporation referred to above.

In the second case, though the water is colder than the air, it still, from the law before mentioned, emits vapour from its surface, but invisibly, as there is no condensing disposition now in the air. The vapour therefore, neither having the power to displace the gaseous fluid, nor heat to cause a circulation of it, can only pass by filtering through its interstices—a most beautiful and astonishing instance of the extreme divisibility of matter.

The force of aqueous vapour disengaged at different temperatures has been determined with great accuracy, and the amount of evaporation has been demonstrated to be, other things being equal, always in proportion to this force.

It may be easily imagined, that as the interstices of the gaseous fluid can contain but a certain quantity of elastic vapour, there would naturally be a limit to evaporation. This is actually the case. It very often happens that the interstices are found to be full, and can hold no more, and that then evaporation ceases; sometimes indeed they may be said to run over, and it is then we see the excess in the shape of steam, or mist, or cloud. The capacity of these interstices of the gaseous fluid becomes larger or smaller in proportion to the temperature of their particles, and the effect of their contraction or expansion is precisely similar to the grasp or relaxation of the hand on a piece of imbibing sponge. At a low temperature, or when the grasp is tightest, a certain quantity can only enter. On the contrary, at a high temperature, or when the sponge is permitted to expand to the utmost, its capacity is increased, and a large volume may be contained.

The total quantity of aqueous elastic vapour which can enter between the interstices of the gaseous fluid, or which the latter can hold suspended, depends upon temperature, but this quantity is invariable at the same temperature. A volume of air may contain less than this quantity, but never more. When it has this exact quantity it will remain transparent, and is said to be saturated, or at its *point of saturation*. It is then as damp as it can be; any attempt to insert more vapour will fail, and the rejected vapour will become visible in the form of steam. If we lower the temperature, the aërial interstices will contract, and some of the contained vapour will be squeezed out in the same form. We may increase the temperature to any extent without any visible change, but we render the air drier in proportion to the degree to which we ascend, and in the same degree capable of receiving and supporting an additional quantity of humidity. Atmospheric pressure also affects the amount of the quantity suspended, by opposing the diffusion and retarding the formation of the vapour. From the aqueous fluid being so abundantly spread over the face of the earth, there can be no doubt that the permanently elastic or gaseous atmosphere would very speedily be saturated with its vapour, did not some cause prevent its universal diffusion. This never-failing cause is inequality of temperature, which excites, or diminishes, or suspends, in the way we have described, the process of evaporation.

The absolute quantity of moisture that air is capable of contain-

ing may be conceived from the following statement of Mr. Leslie: — "Air, at the freezing point, is capable of holding a portion of moisture equal to the 160th part of its own weight; at the temperature of 59° the 80th part; at that of 86° the 40th part; at 113° the 20th part; and at that of 140° the 10th part; so that the air has its dryness doubled at each rise of temperature, answering to 27° of Fahr. While the temperature, therefore, advances uniformly in arithmetical progression, the dissolving power, which this communicates to the air, mounts with the accelerating rapidity of a geometrical series."

By the improved instruments and accurate observations of this gentleman and others, the total quantity of moisture which could be suspended at one time in the air can be correctly estimated. It has been stated by him that at 68° Fahr. a cubic mass of air measuring 40 inches every way can retain 252 grains of water. But if a larger scale be preferred, the same numbers will express in pounds troy the quantity of water required to saturate a perfectly dry mass of air constituting a cube of twenty yards in dimension. If the greatest amount possible of the aqueous element were to be suspended in the atmosphere, and this were to pass from a state of absolute dampness into that of extreme dryness, and discharge the whole of its watery store, it would form a sheet of somewhat less than five inches in depth. To furnish the usual supply of rain, the air must, therefore, undergo very frequent changes equal to that of from dryness to humidity in the course of the year.

The average amount of evaporation in the neighbourhood of London per annum, calculated by Mr. Daniell's hygrometer, a most elegant and perfect instrument for ascertaining the humidity of the atmosphere, is 23.974 in. The average weight of the quantity of water raised by this process, from a circular surface of 6 inches diameter, 0.31 gr. per minute. The results of actual measurement by Mr. Howard accord most satisfactorily with this method of estimating the amount of evaporation, and prove most incontestably the accuracy of the calculations upon which it is founded.

The rate at which this process proceeds near London during the several months of the year is estimated by Mr. Daniell, and recorded in the *British Almanac*, as follows:

	in.		in.
January . .	0.413	July	3.293
February . .	0.733	August . . .	3.327
March . . .	1.488	September. .	2.620
April	2.290	October . . .	1.488
May	3.286	November . .	0.770
June	3.760	December . .	0.516

The smallest quantity of water is, therefore, lifted into the atmosphere during the month of January, and the greatest in June. The mean quantity held in solution in a cubic foot of air, is 3.789 gr.

The rate of exhalation from the surface of the ground is scarcely of less consequence than the fall of rain, and a knowledge of it might often direct the most important operations. Mr. Leslie invented an instrument for measuring the quantity of moisture exhaled from a humid surface in a given time. This he called the Atmometer, and he has estimated that the daily exhalation from

a sheltered surface of water would, at the mean dryness of winter, lower it 0.018 in., and at the mean of summer 0.048 in. And he gives the following instance of its use: Suppose a pool for the supply of a navigable canal exposed a surface equal to 10 English acres, and that the atmometer sunk 80 parts during the lapse of twenty-four hours, the quantity exhaled in that time would be 2904 cubic feet, or about 81 tons, equal to 1700 imp. gall. per acre.

The dissipation of moisture is much accelerated by the agency of sweeping winds, the effect being sometimes augmented 5 or even 10 times. In general, this augmentation is proportional to the swiftness of the wind, the action of still air itself being reckoned equal to that produced by a celerity of eight miles each hour.

Clouds, Fogs, and Mists.

The presence of the ocean of vapour, which we have described as constantly ascending from the earth and constituting part of the atmosphere, is, as has also been observed, not always evident to the sight; in its elastic state it is always invisible, and, therefore, it is only in some of its changes that the eye can detect it. By one of the most remarkable of these, those masses of visible aqueous vapour are formed, which, floating in the sky, or drifting through it with the wind, at different elevations, with every variety of colour and form, are called *clouds;* or which, recumbent on the surface of the land or of the water, and spread over greater or smaller portions of them, are denominated *fogs*, or *mists*, according to their intensity. In all cases, their composition is similar, and consists of the moisture deposited by a body of air, in minute globules.

Their formation, in every position, is a consequence of decrease of temperatures in some parts of the atmosphere where a certain proportion of aqueous elastic vapour is present; but in those where the latter condition may be wanting, it is evident that the development of cloud will not follow the decrement of temperature. Nothing is more common than the fact of the necessary conditions existing in some of the atmospheric strata, and at the same time being absent in others; and thus we can understand the causes of the alternate beds of clouds and clear air, which often diversify the sky in serene weather. We can hence also comprehend how, in stormy weather, a solitary cloud sometimes appears to stand stationary over a mountain-top, while myriads of other clouds drift past it on the gale. An observer on the summit feels the multitudinous dew-drops of the seemingly fixed cloud sweeping by with great velocity, and discovers the stationary aspect which it exhibited below to be altogether an illusion. The fact is, the inferior invisible beds of air are relatively warmer and more moist. They dash against the sloping side of the mountain, and are reflected up to the plane of condensation in the atmosphere, where they give out their excess of water in the form of clouds. Above the cooling influence of the mountain-top, the temperature of the air may not be depressed to the same point, and hence it continues clear.

If the globules of water which constitute a cloud, descend, in

consequence of their weight, and come once more within the influence of an elevated temperature, the aqueous vapour necessarily becomes again invisible. In this way, the under surface of a stratum of clouds becomes nearly parallel, or rather concentric, with the surface of the sub-adjacent landscape over which it floats. Above this first range of clouds, the temperature may still be considerably higher, and hence another large body of air must be passed through, before a temperature sufficiently low be arrived at, to cause a second deposition of clouds.

M. Fresnel ingeniously supposes that the air contained between the minute globules of vapour, or the very fine crystals of snow, which form a mass of clouds, is always of a higher temperature than the surrounding clear air. He supports this opinion on the well-known facts, already alluded to, that the rays of the sun will pass through the air without heating it, unless the air be in contact with water, land, or some other reflecting object. The cloud accordingly forms such a body as will stop the sun's rays, and force them to warm, not only the air in external contact with it, but all the air in its interstices. It follows, therefore, that though the mass of waters in a cloud be heavier than the surrounding air, the warmer air in the interior of the cloud buoys it up and causes it to float*.

M. Gay Lussac, on the other hand, refers the mounting of clouds in the air to the impulsion of the ascending currents, which result from the difference of temperature between the surface of the earth and the air in elevated regions.

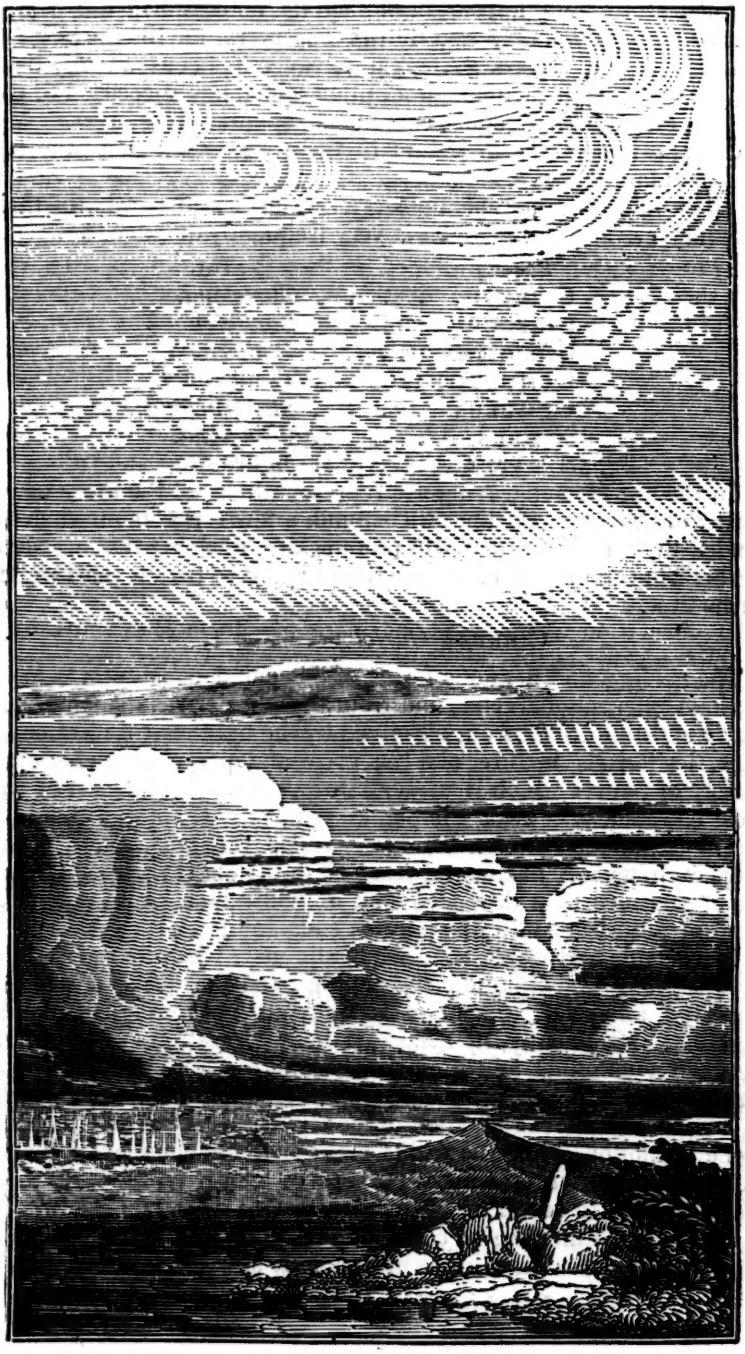
The formation of clouds may be observed with most advantage in Alpine countries, as they are there so frequently produced under the eye, upon the sides or the summits of mountains, by the condensation of the vapour in the sheet of air immediately over them. A mountain cloud is at first of but small extent, but it enlarges insensibly, and is swept by the winds into the bosom of the air, where it either meets and unites with others, or various tufts of these are scattered over the sky. These aërial groups appear, while drifting through the sky, to avoid dashing themselves upon the mountain peaks in their course, and as if endowed with instinctive repulsion, they bound over the crest of a mountain in a concentric curve and slide down into the valley on the other side. The French naturalists, with much plausibility, ascribe this beautiful phenomenon to electricity. M. Bory de St. Vincent thinks that when small tufts of cloud are carried towards the sides or the summit of a mountain, they move with less rapidity than the force (wind) which moves them, and this force consequently arriving sooner at the obstacle, is reflected and meets and checks the cloud in its progress.

The mean height of the clouds may be conceived by the following extract from Mr. Leslie. "We shall not err much, if we estimate the position of extreme humidity at the height of two miles at the pole, and four miles and a half under the equator, or a mile and a half beyond the limit of congelation. This range is nearly

* Annales de Chim. et de Phys. xxi. 260.

parallel to the curve of perpetual congelation in the polar regions, but bends nearer to it in approaching the equatorial parts.

CLASSIFICATION OF CLOUDS.



Infinitely diversified as the forms of clouds may appear to be, correct observers have stated that they may all be comprised in seven modifications. Names and definitions have been given to these by Mr. Howard and Mr. Forster. By this classification and nomenclature their appearances may be noted down and transmitted to contemporary and future observers, for the purposes of comparison and record. A great advance has consequently been made in the perspicuous description which has succeeded to the vague and unintelligible generalities of preceding ages. Mr. Howard's names are in Latin; to them we annex Mr. Forster's English nomenclature.

These following modifications are arranged in the order of their ordinary elevation, but which is very frequently deranged:—

Howard.	Forster:
CIRRUS	*Curlcloud.*
CIRROCUMULUS . .	*Sondercloud.*
CIRROSTRATUS . . .	*Wanecloud.*
CUMULOSTRATUS . .	*Twaincloud.*
CUMULUS	*Stackencloud.*
NIMBUS	*Raincloud.*
STRATUS	*Fallcloud.*

In the annexed engraving are representations of the more usual forms of these genera, and we subjoin a few remarks on each to render their classification still more easy. In doing this, we shall depart from the above order, for the purpose of taking the simpler forms first.

CIRRUS—*Curlcloud.* Fig. 1.

The *curling* and flexuous forms of this cloud constitute its most obvious external character, and from these it derives its name. It may be distinguished from all others by the lightness of its appearance, its fibrous texture, and the great and perpetually changing variety of figures which it presents to the eye. It is generally the most elevated, occupying the highest regions of the atmosphere.

The *comoid cirrus cloud*, vulgarly called the *mare's tail*, is the proper cirrus. It has, as represented in the engraving, somewhat the appearance of a distended lock of white hair, or of a bunch of wool pulled out into fine pointed ends. (*a**.)

In variable and warm weather in summer, when there are light breezes, long and obliquely descending bands of cirrus are often observed, and seem sometimes to unite distinct masses of clouds together. Frequently, by means of the interposition of these cirri, between a cumulus and some other cloud (as, for example, cirrostratus), the cumulostratus, and ultimately the nimbus, is formed.

Upon a minute examination of the cirrus, every particle is found to be in motion, while the whole mass scarcely changes its place. Sometimes the fibres which compose it, gently wave backwards and forwards, to and from each other.

After a continuance of clear, fine weather, the cirrus is often observed as a fine whitish line of cloud, at a great elevation, like a

* See Indications of Weather, p. 84.

white thread stretched across the sky; the ends of which seem lost in each horizon (*b* *).

To this line of cirrus others are frequently added laterally; and sometimes becoming denser by degrees, and descending lower in the atmosphere, inosculate† with others from below, and produce rain. To this kind the name of *linear cirrus* has been given. Sometimes on the sides of the first line of a cirrus, clouds of the same kind are propagated, and sent off in an oblique or transverse direction, so that the whole phenomenon has the appearance of net-work; this has been denominated *reticular cirrus.*

Though the above-mentioned varieties of the cirrus are all composed of *straight* lines of cloud, either parallel, or crossing each other in different directions; they are ranged under the head of *cirrus*, or *curlcloud*, from their analogy of texture to the substance from which this cloud is named.

CUMULUS—*Stackencloud.* Fig. 8.

This cloud is easily known by its irregular hemispherical or heaped superstructure, hence its name *cumulus, a heap or pile.* It has usually a flattened base. The mode of its formation is by the gathering together of detached clouds, which then appear *stacked* into one large and elevated mass, or *stackencloud.* The best time for viewing its progressive formation is in fine settled weather. About sunrise small thinly-scattered specks of clouds may be observed. As the sun rises, these enlarge, those near each other coalesce, and at length the cumulus is completed. It may be called *the cloud of day*, as it usually exists only during that period, dissolving in the evening, in a manner, the exact counterpart of its formation in the morning. Cumuli, which are of a more regular hemispherical form, whitish coloured, and which reflect a strong silvery light when opposed to the sun, appear to be connected with electrical phenomena. Those seen in the intervals of showers are more variable in form, and more fleecy with irregular protuberances. When this kind of cloud increases so as to obscure the sky, its parts generally inosculate, and begin to assume that density of appearance which characterizes the cumulostratus.

STRATUS—*Fall-cloud.* Fig. 11

This kind of cloud rests upon the surface of the globe. It is of variable extent and thickness, and is called *stratus, a bed or covering.* It is generally formed by the subsidence of vapour in the atmosphere, and has therefore been denominated *fall-cloud.* This genus includes all fogs, and those creeping mists, which in summer evenings fill the valleys, remain during the night, and disappear in the morning. The best time for observing its formation is on a fine evening, after a hot summer's day: as the cumuli which have prevailed through the day decrease, a white mist forms by degrees close to the ground, or extends only for a short distance above it. This cloud arises at its density about

* See Indications, p. 84. † Inosculation is a union by the conjunction of the extremities.

midnight, or between that time and morning, and it generally disappears about sunrise. It is, for this reason, called by some, *the cloud of night*. The coming in of autumn is generally marked by a greater prevalence and density of this cloud. In winter it is still denser. It has often been found to be electrified positively. The stratus should not be confounded with that variety of the cirrostratus, which is similar in external appearances: the test to distinguish them is, the stratus does not wet objects that it alights upon;—the cirrostratus moistens everything it touches.

CIRROCUMULUS—*Sondercloud.* Fig. 2.

This consists of extensive beds of a number of little well-defined orbicular masses of clouds, or small *cumuli*, in close horizontal opposition; but at the same time lying quite asunder (*sondercloud*), or separate from one another. It is to be distinguished from some appearances of the cirrostratus, which resemble it, by the dense and compact form of its component nubeculæ (*little clouds*). From the intermediate nature of this cloud between the *cirrus* and *cumulus*, it has been called *cirrocumulus*. The word *sondercloud* is of Saxon derivation.

Sometimes the nubeculæ are very dense in their structure, very round in their form, and in very close opposition.—(*c.**)

At other times, they are of a light fleecy texture, and of no regular form.

The cirrocumulus of summer is of middle nature between the two last; its nubeculæ vary in size and in proximity; and its picturesque appearance in this season often presents, by moonlight, as Bloomfield expresses it,

The beauteous semblance of a flock at rest.

The formation of this kind of cloud is either spontaneous, that is, unpreceded by any other, or results from the changes of some other modification. Thus the cirrus or cirrostratus often changes into cirrocumulus, and *vice versâ*. If it does not terminate with this kind of change, it subsides slowly, as if by evaporation.

CIRROSTRATUS—*Wanecloud.* Fig. 3, 4, 5, 6, 7.

This cloud is distinguishable by its flatness, and great horizontal extension in proportion to its perpendicular height. Under all its various forms, it preserves this characteristic. It often results from the fibres of the cirrus, after descending from a higher station in the atmosphere, subsiding into strata of a more regularly horizontal direction, and hence it is called *cirrostratus*. As it is generally changing its figure, and slowly subsiding, it has received the name of *wanecloud*. It originates more frequently from cirrus than from any other, and less from cumulostratus than cirrocumulus. Being once formed, it sometimes re-assumes the character of the modification from which it originated, but more frequently it evaporates by degrees, or by inosculating, with some other modification, produces the cumulostratus, and eventually the nimbus, falling in rain.

* See Indications, p. 85.

Sometimes this cloud is disposed in wavy bars or streaks, in close horizontal opposition, and these bars vary infinitely in size and colour, generally blended in the middle, but distinct towards its edges, *fig.* 4. A variety not unlike this, is the *mackerel-back sky* of summer evenings. It is often very high in the atmosphere. Another common variety appears like a long streak, thickest in the middle, and wasting away at its edges. This, when viewed in the horizon, has the appearance of *fig.* 7. It often seems to lie on the summit of the cumulostratus, as represented in the engraving; in this case, the density of the latter increases in proportion as the former form and evaporate upon it. The result of this intermixture, and the consequent density, is the formation of the nimbus, and the fall of rain.

Another principal variety of the cirrostratus is one which consists of small rows of little clouds, curved in a peculiar manner, it is from this curvature called *cymoid.* *fig.* 5. (*d**).

Fig. 6 is the representation of a similar one, less perfectly formed, having more of the character of the cirrocumulus, and is often produced when a large cumulus passes under the variety marked *fig.* 7. (*e* †.)

Another remarkable development of this varying genus is, that extensive and shallow sort of cloud, which occurs particularly in the evening and during night, through which the sun and moon but faintly appear. It is in this cloud that those peculiar refractions of the light of those bodies, called halos, mock suns, &c. usually appear. (*f* ‡.)

Cumulostratus—*Twaincloud.* Fig. 9.

The base of this modification is generally flat, and lies on the surface of an atmospheric stratum, the superstructure resembling a bulky cumulus overhanging its base in large fleecy protuberances, or rising into the forms of rocks and mountains. Considerable masses of these frequently are grouped upon a common stratum or base, from which it has been named *cumulostratus.* It derives the other appellation, *twaincloud,* from the frequently visible coalescence of two other modifications, as, for example, the cirrus and the cumulus. Its density is always much greater than the cumulus. Cumulostratus sometimes forms spontaneously, but is generally produced by the retardation of the cumulus in its progress with the wind, which then increases in density and lateral dimensions, and finally protrudes over its base in large and irregular projections. Sometimes contiguous cumuli unite at their bases, and at once become cumulostratus. Sometimes the upper currents of air conduct cirrostratus near the summits of cumuli, or pierce them, as is shewn in the engraving. The effects of this junction have been described under the last modification.

Cumulostratus often evaporates, sometimes changes to cumulus, but, in general, it ends in nimbus, and falls in rain. In long ranges of these clouds it has been observed that part has changed into nimbus, and the rest remained unchanged.

* See Indications, p. 85. † Ibid. ‡ Ibid.

NIMBUS—*Raincloud.* Fig. 10.

This is not a modification depending upon a distinct change of form, but rather from increase of density and deepening of shade in the cumulostratus, indicating a change of structure which is always followed by the fall of rain. This has been, therefore, called *nimbus, (a rainy black cloud.)* Any one of the preceding six modifications may increase so much as to obscure the sky, and, without falling in rain, "dissolve" and "leave not a rack behind." But when cumulostratus has been formed, it sometimes goes on to increase in density, and assume a black and portentous darkness. Shortly afterwards the intensity of this blackness yields to a more grey obscurity, which is an evidence that a new arrangement has taken place in the aqueous particles of the cloud; the nimbus is formed, and rain begins to fall. The shower continues until another interior change succeeds, when the nimbus is extinct, and more or less of other modifications re-appear: the cirrus, cirrostratus, or perhaps the cirrocumulus, is seen in the higher regions of the atmosphere, and the remaining cumulus, no longer retarded, sails along in a current of wind nearer the earth. These effects may be satisfactorily observed when showers fall at a distance, the nimbus can then be seen in profile, and the process of its formation and destruction followed through all its stages.

In addition to this sketch, it may be stated, that masses of cloud may present themselves to the observation so indefinite and shapeless, as to render it difficult to refer them at once to any of the preceding modifications; but it is believed that in every case, if the observations be attentively prolonged, a tendency to resolve into some of these forms, will, sooner or later, be discovered. A circumstance which not only shows their distinct nature, but proves that there are some general causes why aqueous vapour, suspended in the air, should assume, though with great varieties of size and form, certain definable and constant modifications.

INDICATIONS OF APPROACHING CHANGES OF THE WEATHER FROM THE FORM OF THE CLOUDS.

The prognostics of coming weather must always be deduced from those clouds which ultimately prevail; for, in variable weather, all the modifications may be seen in a single day.

CIRRUS. The *comoid*, or *mare's-tail*, variety of this cloud described *a*, p. 80, is an accompaniment of a variable state of weather, and forebodes wind and rain. In very changeable seasons the direction of the fine and almost evanescent tails varies considerably in a few hours. When the tails have had a constant direction towards the same point of the compass for any considerable time, it has been frequently observed that a gale has sprung up from the quarter to which they had previously pointed.

The variety *b*, p. 81, is the first indication of a change to wet.

CIRROCUMULUS. When this cloud prevails, we may, in general, anticipate, in summer, an increase of temperature; in winter, it often precedes the breaking up of a frost, and indicates warm and wet weather.

The variety *c*, p. 82, is striking before, or about the time of thunder storms in summer. It is commonly a forerunner of storms, and has been remarked as such by the poets.

Cirrostratus. The prevalence of this cloud is always a sign of rain or snow.

The *cymoid* arrangement *d*, p. 83, is a sure indication of stormy weather, and the variety, *e*, p. 83, is almost always so.

The variety *f*, p. 83, is the surest prognostic we are acquainted with, of an impending fall of rain or snow.

Cumulostratus may always be regarded as a stage towards the production of rain or snow, and in this case, always ends in the nimbus.

Nimbus is always followed by a fall of rain or snow.

Fogs and mists, when they extend over large surfaces varied with land and water, are generally produced in fine calm weather, after the sun's rays have ceased to warm the earth, by the higher masses of air, which have been rapidly cooled in the more elevated regions of the atmosphere, descending by their weight, and intermixing with the lower, and lighter, and still warmer strata. These are gradually chilled, until the undermost stratum is affected, first to dampness, then to a slight precipitation scarcely visible to the eye, and finally, to mist and fog. The earth, during clear nights, immediately on the withdrawing of the heat-imparting energies of the sun, begins to emit the particles of heat it had acquired during the day, or in ordinary language to cool. The atmosphere does the same, but at a much slower rate. In the race, therefore, between the cooling powers of these two bodies, the start is usually made at sun-set with the earth's surface warmer than the incumbent air. The first, by its more rapid descent, overtakes the latter at same point of equal temperature, and passing its sluggish competitor, becomes colder, and, of course, instead of warming the stratum of air in contact, as it did in the first part of its course, it now, on the contrary, becomes an absorber of heat, and consequently, cools the contiguous bodies. In both these cases the process is favourable to the formation of mist, but in different modes. In the first, it assists the intermixture of the two differently warmed bodies of air, by keeping up the temperature of the lower one, and by thus increasing its disposition to ascend, the mingling and the deposition are more rapid and complete. In the latter case, it is in the same condition with relation to the air near the surface, as the strata above it, namely cooler, and, therefore, it acts similarly; the surface-air being now between two cooling masses, the rate of its condensation and consequent precipitation of moisture is at least continued and perhaps increased.

The phenomenon of mists forming over lakes and rivers, when the atmosphere of their banks and adjacent land is entirely free from visible vapour, is a very remarkable one, and has excited considerable attention. The late Sir H. Davy observed and communicated to the public some curious facts, which have contributed very much to our knowledge on the subject. The principal ope-

rating cause in producing this singular effect, is the difference of the rate of cooling, in the absence of the sun, in fluid and in solid bodies. In the surface of the former, the particles as they are cooled sink, and give place to those beneath, which then are warmer and therefore lighter, producing thus a renewal of surface, and a very slow decrease of its general temperature, compared with those of solid bodies whose particles are motionless among themselves. When these on their surface are cooled, they remain in their place and are affected by the superior warmth of the internal particles, only in the degree of the conducting power of the body. And this conducting power is found to be extremely feeble in most of the substances which form the solid crust of our globe.

These conditions being understood, it will be easy to imagine, that the portion of the atmosphere which reposes on the surface of water, will continue warmer after sun-set on a clear night, than the contiguous parts which rest upon the adjacent land. From its position, too, with regard to an aqueous surface, it will also obtain a greater load of moisture. If we now suppose the cooled air of a superior stratum to descend in the usual manner upon the masses of air lying upon the earth and the water, which, though closely adjoining, are, with regard to heat and humidity, very differently compounded, we shall find that its descent might produce little or no visible change in the land-stratum, while, by its superior weight, it would fall into and partially displace that over the water, intimately intermixing with it, and condensing its moisture, and thus creating in the air a visible river or lake of vapour, whose boundaries in a still night would exactly coincide with the banks of the water beneath, however irregular their outline. Mr. Harvey observed a mist of this kind hovering in a beautiful stratum over the stream which supplies Plymouth with water. The mist moved in the direction of the running stream, but with a velocity much greater, while it accommodated itself, in a most singular manner, in its course, to all the turns and windings of the channel. The breadth of the mist was nearly the same as that of the stream, and its average altitude about five feet. The water of the stream was observed to stand at 56°, the air over the water 47½°, the ground near the mist 45°, the air above it 49°.

The following facts also corroborate the view we have taken of the theory of the formation of mists over water. Sir H. Davy, on descending the Danube during three nights in June, 1818, observed, that the mist regularly appeared over the water in the evening, when the temperature of the air on the shore was from 3° to 6° lower than that of the stream, and that it as regularly disappeared when the temperature of the atmosphere on the banks surpassed that of the river. At six o'clock in the morning of the last day mentioned, Sir H. Davy observed, at the junction of the rivers Inn and Ilz with the Danube, the respective temperatures of the water of the three rivers, and that of the air on the land. He found them, and the existing state of the atmosphere over the waters, to be as follows:—

Temperature of the air on Land.	Temperature of the River.	State of the atmosphere over the Rivers.
	62° Danube.	Thick fog on the whole breadth.
54°	56° Inn.	Dense mist ditto.
	55° Ilz.	Light mist.

This observation strikingly exhibits the precipitation in its varied proportion, produced by the intermixture of the cooler air of the land with that of the floating strata of air over the rivers, at their different temperatures.

If we suppose that we have enumerated above all the causes of the formation of mists, it would be difficult to account for the fact of mists increasing in density and extent after their first formation, or for their continuance after the difference of the temperatures of the air and water had been reduced to nearly nothing. It is evident that the conditions we have mentioned are not sufficient for the production of this effect, and which yet may often be observed. Sir H. Davy thinks that this increase of prolonged existence depends, not only upon the operation of the causes which originally produced them, but likewise upon heat which is evolved from the superficies of the particles of water composing the mist. This produces a descending current of cold air in the very body of the mist, whilst the warmer water continually sends up vapour. This decrease of temperature in the middle of the body of mist was remarked also by Mr. Harvey, during a dense mist, which shrouded not only over the whole of its surface, but the adjacent country also. As the part crossed was nearly a mile in breadth, many opportunities presented themselves of remarking the temperatures of the water and the mist. The river was uniformly 53° all over its surface; on the eastern shore, and for three hundred yards across, the temperature of the air was 42°; as the middle of the river was approached, it subsided to 41°, and again gradually rose until, on the western bank, it had arrived to 43°; the air in the fields close to the river was 42°.

A current of dry air, however, appears to have the effect of suspending all these operations, even where the relative conditions of the water and the air might be supposed to be very favourable to them. Sir H. Davy, during his Danube voyage, observed, that during a strong easterly wind no mists were formed, when the water was 61°, and the air but 54°; a remarkable contrast to the case of the rivers Inn and Ilz before-mentioned, where the difference of a degree or two only was marked by deposition. Mr. Harvey repeatedly observed this effect of dry air at Plymouth.

The peculiar odour which prevails in some fogs, has never yet been satisfactorily accounted for.

Rain, Hail, and Snow.

The water which we see descending from the clouds, in the fluid state of drops, or crystallized in snow, or congealed in hail, is in the final stage of that perpetually recurring journey, which some portion of this element is constantly performing through the atmosphere of our planet.

Lifted up, perhaps, from the surface of some remote ocean, by the process of evaporation, into the region of the winds, and sub-

jected to a play of temperatures infinitely varied, it may, by the changes of its locality, have presented its beautiful evanescent apparition to all the nations of the earth, before that junction of coincidences happened, which produced its fall at our feet. This last change which preceded and terminated its aërial career, was but another effect of the same extensively operating cause which produces in the transparent atmosphere, the deposition of those minute particles of water which constitute a cloud, and which, when greatly increased in energy, assembles and pours them in *rain.*

"The profuse precipitation of humidity which has received this appellation, is caused by a rapid commixture of opposite strata of air of different temperatures. The action of swift contending currents in the atmosphere, brings quickly into mutual contact vast fields of air over a given spot. The separation of moisture is proportionally rapid and copious; the particles conglomerate, and in temperate weather the deposition descends to the earth in the form of *rain.* In the cold season, the aqueous globules, freezing in the mid air into icy spiculæ, collect together during their descent, and become converted, ere they reach the earth's surface, into flakes of *snow. Hail* is formed under different circumstances, and generally in sudden alternations of the fine season, the globules of rain being congealed during their fall, by passing through a stratum of dry and cold air.

"The drops of rain vary in their size, perhaps from the 25th to the ¼th of an inch in diameter. In parting from the clouds, they precipitate their descent till the increasing resistance opposed by the air, becomes equal to their weight, when they continue to fall with a uniform velocity. This velocity is, therefore, in a certain ratio, to the diameter of the drops; hence thunder, and other showers in which the drops are large, pour down faster than a drizzling rain. A drop of the 25th part of an inch, in falling through the air, would, when it had arrived at its uniform velocity, only acquire a celerity of 11½ feet per second; while one of ¼th of an inch would acquire a velocity of 33½ feet.

"A flake of snow being, perhaps, nine times more expanded than water, would descend thrice as slow. Hail-stones are often of considerable dimensions, exceeding, sometimes, the length of an inch; they may, therefore, fall with a velocity of 70 feet per second, or at the rate of about fifty miles in the hour. Striking the ground with such impetuous force, it is easy to conceive the extensive injury which a hail shower may occasion in the hotter climates. The destructive power of these missiles in stripping and tearing the fruits and foliage, increases besides in a faster ratio than the momentum, and may be estimated by the square of their velocity multiplied into their mass. This fatal energy is hence as the fourth power of the diameter of the hail-stone."* The celebrated Volta referred the formation of hail to the play of electricity among the clouds, and upon this theory proposed the erection of *paragrêles*, or hail-rods, in countries much exposed to the ravages of hail-storms. These, upon the same principle as lightning rods, were to consist of lofty poles tipped with metallic points, and

* Leslie.

having metallic wires communicating with the earth. By thus subtracting superabundant electricity from clouds, Volta imagined that the formation of hail would be prevented. These paragrêles have been tried in Switzerland upon an extensive scale; but their success has not been proportionate to the expectations which were formed from a minute experiment.

The average quantity of rain which falls in the course of a year, in the neighbourhood of London, according to Mr. Daniell's observations, amounts to $23\frac{1}{10}$ inches, or, if collected, it would form a sheet of water of that depth. The registers of the rain which have been kept in various parts of the United Kingdom, have given results which have excited some doubt of their accuracy. Mr. Leslie thinks, that "in general twice as much rain falls on the western as on the eastern side of our island, and that the average annual quantity may be reckoned at 30 inches. According to this estimate, the whole discharge from the clouds in the course of a year, on every square mile of the surface of Great Britain, would, at a medium, be 1,944,633, or nearly two millions of tons. This gives about three thousand tons of water for each English acre, a quantity equal to 630,000 imperial gallons."

The contributions of the several months to the production of this quantity, are stated by Mr. Daniell, and recorded in the British Almanac, to be in the following proportions:—

January . .	1.483	July . . .	2.516
February . .	0.746	August . . .	1.453
March . .	1.440	September . .	2.193
April . .	1.786	October . .	2.073
May . . .	1.853	November . .	2.400
June . . .	1.830	December . .	2.426

The greatest average quantity, therefore, falls in July, and the smallest in February.

In comparing the quantities which fall in the twenty-four hours which constitute a day, the result of experiment shews that a greater amount of rain falls while the sun is below, than when above the horizon.

One very remarkable circumstance attending the fall of rain, is, "that smaller quantities have been observed to be deposited in high than in low situations, even though the difference of altitude should be inconsiderable. Similar observations have been made at the summit, and near the base of hills of no great elevation. Rain-gauges, placed on both sides of a hill at the bottom, always indicate a greater fall of rain than on the exposed top*."

If the whole of the waters which fall from the heavens were to return again, the evaporation from the ground might be sufficient alone to maintain the perpetual circulation. But more than one-third of all the rains and snows are carried by the rivers into the ocean, which must hence restore this continued waste.

* Leslie.

*** The Natural History of the Weather embraces the phenomena of Dew and Hoar Frost, Dryness and Moisture, Heat and Cold, Thunder and Lightning, and Winds; as well as those of Evaporation, Clouds, Fogs and Mist, and Rain, to which the present article is necessarily limited by our space. The subject will be pursued in the Companion for 1831.

XI. COMPARATIVE SCALES OF THERMOMETERS.

A FERTILE cause of error in estimating and comparing the statements of temperature is the very different manner in which they are recorded by scientific men of different nations. Wherever the English language prevails, the graduation of *Fahrenheit* is generally preferred. By the German authors Römer (*Reaumur*) is used; and the French have, within few years, decided to adopt that of Celsius, a Swedish philosopher, calling it "*Thermomètre Centigrade.*" To diminish this evil, in some degree, the annexed diagram has been constructed, which shews, by inspection, the expression of any point of temperature in the degrees of either or of all of the above-mentioned scales; and the comparison of any degree of one with the equivalent degrees of the others. The Russians still use the graduation of De Lisle; but as Russian scientific authors are rarely read or quoted, it has not been thought necessary to do more than state its mode of graduation.

The two remarkable temperatures of the boiling and the freezing of water are thus expressed by the several thermometers mentioned.

	Fahr.	Centig.	Reaum.	De Lisle.
Boiling point .	212°	100°	80°	0°
Freezing ditto .	32	0	0	150

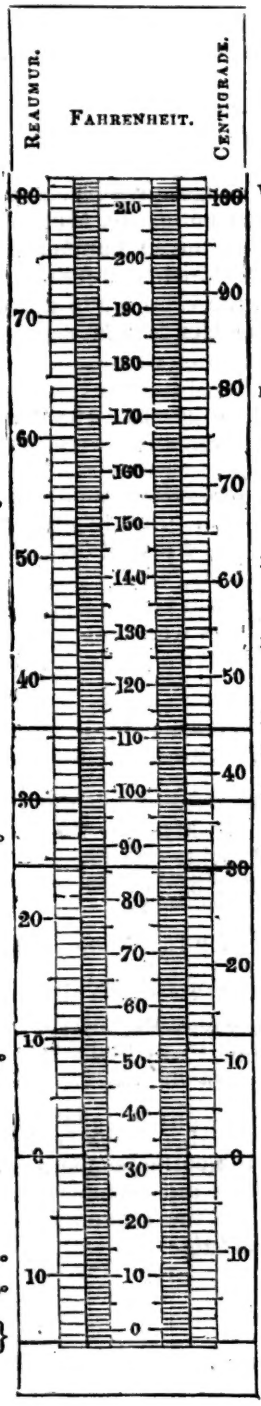
So that the number of degrees of each included between these two points in each is 180° Fahr., 100° Centig., 80° Reaum., 150° De Lisle; and of course 9° Fahr. = 5° Centig. = 4° Reaum. = 7½ De Lisle. Fahrenheit's is, therefore, the smallest degree, and Reaumur's the largest. The 0° is called the *zero:* all degrees below this are called *minus*, and are prefixed by a dash, thus, −20°. In the Reaumur and Centigrade scales, the degrees above zero are also called *plus*, and marked thus, +20°, to prevent one kind being mistaken for another.

Rules for changing the Degrees of any one of the Scales, into equivalent degrees on those of another.

Fahrenheit into Reaumur.—Each degree of Fahrenheit is equal to ⅘ of one of Reaumur. Multiply the number of degrees of Fahrenheit, when the given number is more or less than 32, by 4, and divide the product by 9. The quotient is the equivalent number of degrees on Reaumur's scale. If the given number was more than 32, the Reaumur degrees will be *plus;* if less, *minus.*

F. R.
41°=+4°, for 41−32= 9 9×4=36 36÷9=+4°
14°=−8°, for 32−14=18 18×4=72 72÷9=−8°.

Reaumur into Fahrenheit.—Each degree of Reaumur is equal to 2¼ of one of Fahrenheit. Multiply the given number of degrees of Reaumur by 9, and divide the product by 4. If the degrees of Reaumur were minus, the quotient must be deducted from 32, and the remainder will be the equivalent degrees of Fahrenheit. If the



WATER BOILS, the Barometer being 30 inches.

174° Fahr.—Alcohol boils. Bar. 30 ins.

Highest Temp. at London . . . Sun's rays . . . 154°

142°—Bees wax melts.

127°—Tallow melts.

FEVER HEAT as usually marked.

107°—Fever Heat in general.

BLOOD HEAT.

Highest Temp. of the Air at do. 90°

SUMMER HEAT.

TEMPERATE.

Mean Temp. of do. at do. 49½°

50°—Usual Temp. of Spring water.

WATER FREEZES.

20°—Strong Wine freezes.

Lowest Temp. of do. at do. 11°

Ditto at the Earth's surface at do. 5°

Greatest cold observed in the shade in England . . . .

given degrees were not minus, the quotient must be added to 32°, and the sum will be the equivalent sought.

R. F.
$-12° = 5°$, for $12 \times 9 = 108$ $108 \div 4 = 27$ $32 - 27 = 5°$
$+16° = 68°$, for $16 \times 9 = 144$ $144 \div 4 = 36$ $36 + 32 = 68°$.

Fahrenheit into Centigrade.—Each degree of Fahrenheit is equal to $\frac{5}{9}$ of one of the Centigrade. Multiply the number of degrees of Fahrenheit, when the given number is more or less than 32, by 5, and divide the product by 9; the quotient is the equivalent number of degrees on the Centigrade scale. If the given number was more than 32, the Centigrade degrees will be *plus;* if less, *minus.*

F. C.
$50° = +10°$. for $50 - 32 = 18$ $18 \times 5 = 90$ $90 \div 9 = +10°$
$23° = -5°$, for $32 - 23 = 9$ $9 \times 5 = 45$ $45 \div 9 = -5°$.

Centigrade into Fahrenheit.—Each degree of the Centigrade is equal to $1\frac{4}{5}$ of Fahrenheit. Multiply the given number of degrees of the Centigrade by 9, and divide the product by 5. If the Centigrade degrees were minus, the quotient must be deducted from 32, and the remainder will be the equivalent degrees of Fahrenheit. If the given degrees were not minus, the quotient must be added to 32, and the sum will be the equivalent sought.

C. F.
$-15° = 5°$, for $16 \times 9 = 135$ $135 \div 5 = 27$ $32 - 27 = 5°$
$+10° = 50°$, for $10 \times 9 = 90$ $90 \div 5 = 18$ $18 + 32 = 50°$.

Reaumur into Centigrade.—Each degree of Reaumur is equal to $1\frac{1}{4}$ of the Centigrade. Multiply the given number of degrees of Reaumur by 5, and divide the product by 4; the quotient will be the equivalent number of degrees on the Centigrade scale.

R. C.
$16° = 20°$, for $16 \times 5 = 80$ $80 \div 4 = 20°$.

Centigrade into Reaumur.—Each degree of the Centigrade is equal to $\frac{4}{5}$ of one of Reaumur. Multiply the given number of degrees of the Centigrade by 4, and divide the product by 5; the quotient will be the equivalent number of degrees on Reaumur's scale.

C. R.
$60° = 48°$, for $60 \times 4 = 240$ $240 \div 5 = 48°$.

Extensive tables of the correspondence of these thermometrical scales, and of some of the most remarkable temperatures, may be found in the Treatise on the Thermometer and Pyrometer in the *Library of Useful Knowledge.*

PART II.

GENERAL INFORMATION ON SUBJECTS OF CHRONOLOGY, STATISTICS, &c.

XII. A CHRONOLOGICAL TABLE OF THE PRINCIPAL GEOGRAPHICAL DISCOVERIES OF MODERN EUROPEAN NATIONS.

861 *Feroe Islands*—discovered about this time by a Scandinavian vessel.

871 *Iceland*—discovered by some Norwegian chiefs, who were compelled to leave their native country. According to some accounts it had been visited before this, by a Scandinavian pirate, Naddodd.

950 *Greenland*—discovered by the Icelanders about this period. The first colony established there was destroyed by a pestilence in the 14th century, and by the accumulation of ice which prevented all communication between Iceland and Greenland.

1001 *Winenland*—a part of the continent of America, is supposed to have been discovered by the Icelanders. It was called Winenland, or Vinland, from the abundance of a species of vine found there. The Icelandic chronicles are full and minute respecting this discovery.

1344 *Madeira.*—The discovery of this island attributed to an Englishman, Robert Macham; it was revisited in 1419 by Juan Gonzalez, and Tristan Vaz, Portuguese.

1345 *Canary Isles*—discovered by some Genoese and Spanish seamen, having been known to the ancients.

1364 *Guinea*—the coast of, discovered by some seamen of Dieppe, about this period.

1418 *Porto Santo*—discovered by Vaz and Zarco, Portuguese.

1419 *Madeira*—discovered by the same navigators. It was first called St. Lawrence, after the Saint's day on which it was seen:—and subsequently Madeira, on account of its woods.

1434 *Cape Bojador* or *Nun*—doubled for the first time by the Portuguese.

1440
1445 } *Senegal River*—discovered by the Portuguese.

1446 *Cape Verd*—discovered by Denis Fernandez, a Portuguese.

1448 *Azores Islands*—discovered by Gonzallo Vello, a Portuguese.

1449 *Cape Verd Islands*—discovered by Antonio de Noli, a Genoese in the service of Portugal.

1471 *Island of St Thomas*, under the Equator, discovered.

1484 *Congo*—discovered by the Portuguese, under Diego Cam.

1486 *Cape of Good Hope*—discovered by Bartholomew Diaz. It was originally called "The Cape of Tempests," and was also named "The Lion of the Sea," and "The Head of Africa." The appellation was changed by John II., King of Portugal, who augured favourably of future discoveries from Diaz having reached the extremity of Africa.

1492 *Lucayos* (or *Bahama*) *Islands*.—These were the first points of discovery by Columbus. *San Salvador*, one of these islands, was first seen by this great navigator, on the night of the 11th or 12th of October, in this year.

Cuba, Island of
Hispaniola, or *St. Domingo* } discovered by Columbus in his first voyage.

1493 *Jamaica*
St. Christopher's
Dominica } discovered by Columbus in his second voyage.

1497 *Cape of Good Hope*—doubled by Vasco di Gama, and the passage to India discovered.

1497 *Newfoundland*—discovered by John Cabot, who first called it Prima Vista and Baccalaos. The title of Prima Vista still belongs to one of its capes, and an adjacent island is still called Baccalao.

1498 *Continent of America*—discovered by Columbus.

Malabar, Coast of—discovered by Vasco di Gama.

Mozambique, Island of—discovered by Vasco di Gama.

1499 *America, Eastern Coasts of*—discovered by Ojéde and Amerigo Vespucci. (It is contended by some that this preceded by a year the discovery of the American Continent by Columbus.)

1500 *Brazil*—discovered 24th April by Alvarez de Cabral, a Portuguese, who was driven on its coasts by a tempest. He called it the Land of the Holy Cross. It was subsequently called Brazil, on account of its red wood; and was carefully explored by Amerigo Vespucci, from 1500 to 1504.

1501 *Labrador and River St. Lawrence*—discovered by Corterçal, who sailed from Lisbon on a voyage of discovery for the Portuguese.

1502 *Gulf of Mexico.*—Some of the shores of this Gulf explored by Columbus on his last voyage.

St. Helena, the Island of—discovered by Jean de Nova, a Portuguese.

1506 *Ceylon*—discovered by the Portuguese. Ceylon was known to the Romans in the time of Claudius.

1506 *Madagascar, Island of*—discovered by Tristan da Cunha, and revisited by the Portuguese navigator Fernandez Pereira, in 1508. This island was first called St. Laurence, having been discovered on the day of that saint.

1508 *Canada*—visited by Thomas Aubert. Known before to fishermen who had been thrown there by a tempest.

Ascension Isle—discovered by Tristan da Cunha.

Sumatra, Island of—discovered by Siqueyra, a Portuguese.

1511 *Sumatra*—more accurately examined by the Portuguese.

Molucca Isles—discovered by the Portuguese.

Sunda Isles—discovered by Abrew, a Portuguese.

1512 *Maldives.*—A Portuguese navigator, wrecked on these Islands, found them in occasional possession of the *Arabians.*

Florida—discovered by Ponce de Leon, a Spanish navigator.

1513 *Borneo and Java.*—The Portuguese became acquainted with these Islands.

1513 *South Sea.*—The Great Ocean was discovered this year from the mountains of Darien, by Nugnez de Balboa, and subsequently navigated by Magellan. The supposition of the New World being part of India now ceased.

1515 *Peru*—discovered by Perez de la Rua.

1516 *Rio Janeiro*—discovered by Dias de Solis.

1516 *Rio de la Plata*—discovered by the same.

1517 *China*—discovery of, by sea, by Fernand Perez d'Andrada.

1517 *Bengal*—discovered by some Portuguese thrown on the coast by a tempest.

1518 *Mexico*—discovered by the Spaniards. Conquered by Cortez, in 1519.

1519 *Magellan, Straits of*—passed by Magellan with a fleet of discovery, fitted out by the Emperor Charles V. The first voyage round the world was undertaken by this navigator; and his vessel performed the enterprise, although the commander perished.

1520 *Terra del Fuego*—discovered by Magellan.

1521 *Ladrone Islands*—discovered by Magellan.

1521 *Philippines.*—This archipelago discovered by Magellan, who lost his life here in a skirmish.

1524 *New France.*—The first voyage of discovery made by the French under Francis the First, one of whose ships, after reaching Florida, coasted along as far as 50° north latitude, and gave to this part the name of New France.

1524 *North America*—travelled over from Florida to Newfoundland by Verrazzani, a Florentine, in the service of France.

1525 *New Holland*—discovered by the Portuguese about this time: this immense tract was for some time neglected by Europeans, but was visited by the Dutch, at various periods, from 1619 to 1644. This fine country is now colonised by the English, and every year adds something to our knowledge of its extent and its peculiarities.

1527 *New Guinea*—discovered by Saavedra, a Spaniard, sent from Mexico, by Cortez.

1530 *Guinea*—the first voyage to, made by an English ship for elephants' teeth.

1534 *Canada*—visited by Cortier, of St. Malo; a settlement having previously been made in 1523, by Verrazzani, who took possession in the name of Francis I. of France.

1535 *California*—discovered by Cortez.

1537 *Chili*—discovered by Diego de Almagro, one of the conquerors of Peru.

1541 *Labrador*—discovered by a French engineer, Alphonze.

1541 *India*—the first English ship sailed to, for the purpose of attacking the Portuguese.

1542 *Japan*—discovered by the Portuguese, Antonie de Meta and Antonie de Peyxoto, who were cast by a tempest on its coasts.

1545 *Potosi*, Mines of—discovered by the Spaniards.

1552 *Spitzbergen*—observed by the English, but mistaken for part of Greenland. Visited by Barentz, a Dutch navigator in search of a north-east passage, in 1596.

1553 *White Sea.*—This sea, which had not been visited since the time of Alfred, was now supposed to be discovered by Chancellor, the English navigator.

Nova Zembla—discovered by Willoughby, an English seaman.

1575 *Solomon's Isles*—discovered by Mendana, a Spaniard, sent by the Governor of Peru.

1576 *Frobisher's Strait*—discovered by the English navigator whose name it bears.

Greenland—further explored by Frobisher, who also penetrated further between this country and Labrador.

1577 *New Albion*—discovered by Drake, who was the second to attempt a voyage round the world, which he performed in three years.

1580 *Siberia*—discovered by Yermak Timophéiévitch, Chief of Cossacks.

1587 *Davis's Strait*—discovered by the English navigator whose name it bears, in his voyage for the discovery of a north-west passage.

1594 *Falkland Islands*—discovered by the English navigator, Hawkins.

1595 *Marquesas*—discovered by Mendana, a Spaniard, on his voyage from Peru to found a colony in the Solomon Isles.

Solitary Island—discovered by Mendana on the above-named voyage.

1606 *Archipelago del Espirito Santo*—discovered by Guiros, a Portuguese, sent from Peru. These islands are the Cyclades of Bougainville, and the New Hebrides of Cook.

Otaheite—supposed to be discovered by Guiros, who named it Sagittaria.

1607 } *Hudson's Bay*—discovered by the celebrated English navigator,
1610 } Hudson, on his third voyage. Venturing to pass the winter in this

Bay on his fourth voyage, he was, with four others, thrown by his sailors into a boat, and left to perish.

1607 *Chesapeak Bay*—discovered by John Smith.

1615 *Straits of Le Maire*—discovered, with the island of Staten on the east, by Le Maire, a merchant of Amsterdam, and Schuten, a merchant of Horn.

1616 *Cape Horn*—doubled by Le Maire and Schouten, Dutch navigators, who called it after the town of which Schouten was a native. These enterprising men performed a voyage round the world in about two years.

1616 *Van Dieman's Land*—discovered by the Dutch.

1616 *Baffin's Bay*—discovered by William Baffin, an Englishman. The nature and extent of this discovery were much doubted, till the expeditions of Ross and Parry proved that Baffin was substantially accurate in his statement.

1636 *Frozen Ocean.*—In this year the Russians discovered that this ocean washed and bounded the north of Asia. The first Russian ship sailed down the Lena into this sea.

1642 *New Zealand*—with the southern part of Van Dieman's Land, discovered by Tasman, a Dutch navigator.

1654 *Bourbon*—Isle of, occupied by the French.

1673 *Louisiana*—discovered by the French. This country received its name from La Salle, a Frenchman, who explored the Mississippi, in 1682.

1686 *Easter Island*—discovered by Roggewein, a Dutch navigator.

1690 *Kamschatka*—the principal settlement of the Russians on the coast of Asia, discovered by a Cossack chief, Morosko. This country was taken possession of by the Russians in 1697.

1692 *Japan*—Carefully visited by Kemfer, a German.

1699 *New Britain.*—This island, and the straits which separate it from New Guinea, discovered by Dampier. This enterprising seaman made a voyage round the world at the period of this discovery.

1711 *Kurile Isles*—occupied by the Russians. The people of these islands, which are twenty-one in number, still pay tribute to Russia. They are principally volcanic.

1728 *Behring's Strait*—explored and designated by a Danish navigator in the service of Russia, whose name it bears. Behring thus established that the continents of Asia and America are not united, but are distant from each other about thirty-nine miles.

1728 *Kamschatka*—ascertained by Behring to be a peninsula.

1741 *Aleutian Isles*—on the coast of North America, discovered by Behring. A more accurate survey of these islands was made under the Russian Government, by Captains Billing and Sarytchef, from 1781 to 1798.

1765 *Duke of York's Island*—discovered by Byron.

Isles of Danger—discovered by Byron.

1767 *Otaheite*—discovered by Wallis.

1768 *Cook's Strait*—discovered by Captain Cook on his first voyage round the World, which occupied from 1768 to 1771.

1770 *New South Wales*—discovered by Captain Cook.

1772 *Island of Desolation*—the first land south of India, discovered by Kerguelen, and called by his name. Subsequently called the Island of Desolation by Captain Cook.

1774 *New Caledonia*—discovered by Cook in his second voyage, 1772—1775.

1778 *Icy Cape*—discovered by Captain Cook.

1778 *Sandwich Islands*—discovered by Cook in his third voyage, which commenced in 1776. He lost his life in 1779.

1797 *Bass's Straits.*—Mr. Bass, Surgeon of H.M.S. Reliance, penetrated as far as Western Port, in a small open boat, from Port Jackson, and was of opinion that a Strait existed between New South Wales and Van Dieman's Land. In 1799, Lieut. Flinders circumnavigated Van Dieman's Land, and named the Strait after Mr. Bass.

1804, 5, 6 *Missouri* explored to its sources by Captains Lewis and Clarke, and the origin and source of the *Columbia* ascertained.

1819 *Barrow's Straits*—discovered by Lieut. Parry, who penetrated as far as Melville Island, in lat. 74° 26′ N., and long. 113° 47′ W. The Strait was entered on the 3d August. The lowest state of the thermometer was 55° below zero of Fahrenheit.

1819 *New South Shetland*—discovered by Mr. Smith, of the brig William, bound to Valparaiso.

1819 } *North America*—The northern limits of, determined by Capt. Franklin,
1822 } from the mouth of the Coppermine River to Cape Turnagain.

1821 *Asia*—The northern limits of, determined by Baron Wrangel.

1825-6 *North America*—Franklin's second expedition, in which the coast between the mouths of the Coppermine and M'Kenzie's rivers, and the coast from the mouth of the latter to 149½ W. long. were discovered.

1827 *North America.*—In August of this year, Captain Beechey, in H.M.S. Blossom, discovered the coast from Icy Cape to Point Barrow, leaving about 140 miles of coast unexplored between this Point and Point Beechey. Point Barrow is in 156½° W. long.

XIII. EMPERORS OF CONSTANTINOPLE.

A Chronological Series of the Emperors of Constantinople from the time of Egbert the Great, King of England, A.D. 800, to the Conquest of that City by the Turks in 1453, and continued from that date to the Year 1829—showing both the Christian and Mohammedan Era, at the Accession of each Monarch. Intended as a Supplement to the "Comparative Chronological Table of European Monarchs" in the Companion for 1829.

Christian Era.	Year of the Hegira.	
800	184	Irene, the 40th monarch from Constantine the Great, who succeeded her son, Constantine VI., murdered by her A.D. 797, or, according to some authorities, 792.
802	186	Nicephorus I.
811	196	Michael I., Rhangabè.
813	197	Leo V., the Arminian.
820	205	Michael II., the Stammerer.
829	214	Theophilus Logothetes.
842	227	Michael III.
867	253	Basil I., the Macedonian.
886	272	Leo VI., the Sage.
911	298	Alexander, and Constantinus VII., Porphyrogenitus,
919	307	Who associated Romanus I., Lecapenus, with him.
945	333	Constantinus VII. alone.
959	348	Romanus II., the Boy.
963	352	Nicephorus II., Phocas.
969	359	John Zimisces, or the Small.
976	365	Basil II. and Constantine IX.
1025	416	Constantine IX. alone.
1028	419	Romanus III.
1034	425	Michael IV., the Paphlagonian.
1041	433	Michael V., Calaphates.
1042	433	Zoe and Theodora.
1042	433	Constantine X., Monomachus.

1054	446	Theodora.
1056	448	Michael VI., Stratioticus.
1057	449	Isaac I., Comnenus.
1059	451	Constantine XI., Ducas.
1067	459	Eudocia and her sons, Michael, Andronicus, and Constantine XII.
1067	459	Romanus III., Diogenes, who married Eudocia.
1071	463	Michael VII., Parapinaces.
1078	470	Nicephorus III., Botaniates.
1081	473	Alexius I., Comnenus.
1118	512	John Comnenus, the Handsome.
1143	537	Manuel Comnenus.
1180	576	Alexius Comnenus II.
1183	579	Andronicus I., Comnenus.
1185	581	Isaac II., Angelus.
1195	591	Alexius Angelus.
1203	599	Isaac Angelus restored.
1204	600	Alexius Ducas, or Mourzoufle. In this year the City of Constantinople was taken by storm by the Western Crusaders, Mourzoufle was put to death, his eyes being first torn out.
1204	600	Baldwin of Flanders elected Emperor.
1206	603	Henry.
1217	614	Peter de Courtenai.
1219	616	Robert de Courtenai.
1228	625	John de Brienne, King of Jerusalem, Regent and joint Emperor with Baldwin the Second.
1237	634	Baldwin II., alone.
1261	659	Michael Paleologus retakes Constantinople, and expels Baldwin the Second, who dies in exile; thus restoring the old Greek line. It should be remembered that the Greek Emperors still retained their title and established their empire at Nice in Bithynia. The Greek Emperors during the French interregnum were, Theodore Lascaris, A.D. 1204, A.H. 600; John Ducas Vataces, A.D. 1222, A.H. 619; Theodore Lascaris II., A.D. 1255, A.H. 653; and John Lascaris, A.D. 1259, A.H. 657, blinded and deposed by Michael Paleologus, A.D. 1261, A.H. 660.
1282	681	Andronicus Paleologus, the Elder.
1292	691	Andronicus Paleologus and Michael.
1320	720	Andronicus Paleologus alone.
1323	723	Andronicus Paleologus and Andronicus the Younger.
1328	728	Andronicus the Younger, alone.
1341	742	John Cantacuzene.
1355	755	John Paleologus.
1391	793	Manuel Paleologus.
1425	828	John Paleologus II.
1448	852	Constantine Paleologus, the last Christian Emperor. On the 29th of May, A.D. 1453, A.H. 857, Constantinople was taken by the Turks, the Emperor Constantine killed, and Mohammed II. ascended the throne of the Eastern empire, thus founding the present empire of Turkey in Europe.
1453	857	Mohammed II., the first Mohammedan Emperor.
1481	886	Bajazet or Bayezeed II.
1512	918	Selim I.
1520	926	Solyman, the Magnificent.
1566	974	Selim II.
1574	982	Amurath, or Morat III.
1595	1003	Mohammed III.
1604	1012	Achmed I.
1617	1026	Mustapha, or Moostâphâ I.
1618	1027	Osman I.
1622	1031	Mustapha restored.

1623	1032	Amurath IV.
1640	1049	Ibrahim.
1648	1058	Mohammed IV.
1687	1099	Solyman II.
1691	1102	Achmed II.
1695	1106	Mustapha II.
1703	1115	Achmed III.
1730	1143	Mohammed V.
1754	1167	Osman II.
1757	1170	Mustapha III.
1774	1188	Abed ul Hamet.
1789	1203	Selim III.
1808	1223	Mohammed VI. the present Emperor, A.D. 1829, A.H. 1245.

*** For an explanation of the Era of the Hegira, see p. 23.

XIV.—REIGNING SOVEREIGNS IN EUROPE;

ARRANGED ACCORDING TO THE DATE OF THEIR ACCESSION.

SOVEREIGNS.	Date of Accession.	Age at time of Accession.
Duke of Saxe Altenbourg (formerly Hildbourghausen), Frederic	Sep. 22, 1780.	17
Grand Duke of Mecklenbourg Schwerin, Francis	Apr. 24, 1785.	28
Prince of Hohenzollern-Sigmaringen, Anthony	Dec. 26, 1785.	23
Prince of Lippe-Schaumbourg, George William	Feb. 13, 1787.	2
Grand Duke of Hesse-Darmstadt, Louis	Apr. 6, 1790.	36
Emperor of Austria, Francis	Mar. 2, 1792.	24
Prince of Schwarzbourg-Sonderhausen, Gunther	Oct. 14, 1794.	33
Duke of Anhalt-Bernbourg, Alexis	Apr. 9, 1796.	28
King of Prussia, Frederic William III.	Nov. 16, 1797.	27
Prince of Lippe-Detmold, Leopold	Apr. 4, 1802.	5
Duke of Saxe Meiningen, Bernard	Dec. 24, 1803.	3
Prince of Lichtenstein, John Joseph	Mar. 24, 1805.	44
Duke of Saxe-Cobourg-Gotha, Ernest	Dec. 9, 1806.	22
Prince of Schwarzbourg-Roudolstadt, Gunther	Apr. 28, 1807.	13
King of Denmark, Frederic VI.	Mar. 13, 1808.	40
King of Spain, Ferdinand VII.	Mar. 19, ——	23
Sultan of Turkey, Mahmoud II.	July 28, ——	24
Prince of Hohenzollern-Heckingen, Frederic	Nov. 2, 1810.	34
Prince of Waldeck, George	Sep. 9, 1813.	23
King of the Netherlands, William I.	Dec. 3, ——	41
Duchess of Parma, Maria Louisa	May 30, 1814.	22
Duke of Modena, Francis IV.	June 8, 1815.	35
Duke of Brunswick, William	June 16, ——	30
Duke of Nassau, William	Jan. 9, 1816.	23
King of Wurtemberg, William	Oct. 30, ——	35
Grand Duke of Mecklenbourg Strelitz, George	Nov. 6, ——	37
Prince of Reuss-Greitz, Henry	Jan. 29, 1817.	26
Duke of Anhalt Dessau, Leopold	Aug. 9, ——	22
King of Sweden, Charles XIV.	Feb. 5, 1818.	54
Prince of Reuss-Schleiz, Henry	Apr. 17, ——	32
Grand Duke of Baden, Louis	Dec. 8, ——	55
Duke of Anhalt-Koethen, Ferdinand	Dec. 16, ——	48
King of Great Britain, George IV.	Jan. 29, 1820.	57
Elector of Hesse-Cassel, William II.	Feb. 27, 1821.	43
King of Sardinia, Felix	Apr. 19, ——	56
Prince of Reuss, Lobenstein, and Ebersdorff, Henry	July 10, 1822.	25
Duke of Lucca, Charles Louis	Mar. 13, 1824.	25
Grand Duke of Tuscany, Leopold II.	June 17, ——	26
King of France, Charles X.	Sep. 16, ——	67
King of the Two Sicilies, Francis I.	Jan. 4, 1825.	46
King of Bavaria, Louis	Oct. 13, ——	39
Emperor of Russia, Nicholas I.	Dec. 1, ——	29
Queen of Portugal, Maria II. da Gloria	May 2, 1826.	6
King of Saxony, Anthony	May 5, 1827.	72
Grand Duke of Saxe Weimar, Charles Frederic	June 14, 1828.	45
Pope Pius VIII.	Mar. 31, 1829.	67
Landgrave of Hesse-Hombourg, Louis	Apr. 2, ——	59
Grand Duke of Oldenbourg, Augustus	May 21, ——	46

XV. PROPORTION of REVENUE, &c. to POPULATION.

Proportion of Revenue to Population.

Every inhabitant.

Great Britain	£2	12	0
France	1	4	1
Netherlands	1	0	9
Prussia	0	13	7
United States of America	0	9	7
Austria	0	8	1½
Russia	0	4	9¼

Proportion of the Army to the Population.

Russia	One soldier to	57
Prussia		80
Austria		118
France		138
Netherlands		142
Great Britain		229
United States		1977

inhabitants.

Proportion of Debt to Population.

Every inhabitant.

Great Britain	£34	15	2¼
Netherlands	25	12	0
France	5	16	0
Austria	1	16	0
United States	1	7	2¼
Prussia	1	3	2¾
Russia	0	16	9¾

Proportion of the Fleet to the Population.

Vessels of the line and frigates 1

Great Britain	to	82,979
Sweden and Norway		154,640
Netherlands		170,556
France		290,909
United States		316,000
Russia		686,250
Austria		2,909,091

inhabitants.

Proportion of Representation to Population.

Norway has	75	deputies,	or 1 to every	14,000	inhabitants.
Great Britain	658	—	or 1 —	35,455	
The Netherlands	110	—	or 1 —	55,845	
The United States	187	—	or 1 —	60,129	
France	430	—	or 1 —	74,418	

XVI. NUMBER OF JEWS IN DIFFERENT COUNTRIES.

EUROPE.—In Russia and Poland, 658,809; Austria, 453,524; European Turkey, 321,000; States of the German Confederation, 138,000; Prussia, 134,000; Netherlands, 80,000; France, 60,000; Italy, 36,000; Great Britain, 12,000; Cracow, 7300; Ionian Isles, 7000; Denmark, 6000; Switzerland, 1970; Sweden, 450. Total number of Jews in Europe, 1,918,053, or a proportion of 113th part of the population calculated at 227 millions.

ASIA.—Asiatic Turkey, 300,000; Arabias, 200,000; Hindostan, 100,000; China, 60,000; Turkistan, 40,000; Province of Iran, 35,000; Russia in Asia, 3000. Total, 738,000.

AFRICA.—Morocco and Fez, 300,000; Tunis, 130,000; Algiers, 30,000; Gabès, or Habesh, 20,000; Tripoli, 12,000; Egypt, 12,000. Total 504,000.

AMERICA.—North America, 5000; Netherlandish Colonies, 500; Demerara and Essequibo, 200. Total, 5700. New Holland, 50.—(*Weimar Ephem. Geog.*)

XVII. MILBANK PENITENTIARY.

From the annual Report of this establishment for the last year, it appears that on the 31st December, 1827, there were 471 male prisoners, and that 177 had been received during the year. Of the whole of these, 12 had died, and 83 had been discharged, leaving a total number remaining on the 31st December, 1828, of 553: of female prisoners there were 113 in the establishment at the close of 1827, 74 had been received during 1828, three had died, 40 had been discharged, and one had been sent to Bethlehem, making a total number of females remaining in the Penitentiary at the beginning of this year, 143. The earnings of the prisoners during the year are valued at 4191*l.* 13*s.* 6*d.*; *viz.* of the males, in

manufacturing, 3102*l.* 15*s.*, of the same as wardsmen, cooks, and bakers, 347*l.* 2*s.* 6*d.*, of the females in needle-work, 311*l.* 19*s.* 6*d.*, as wardswomen, cooks, and laundry-women, 429*l.* 18*s.* 6*d.* After deducting allowances to prisoners (one-eighth on manufactures, two-eighths on wages, and to officers one-eighth on manufactures), the profit arising to the establishment, and employed towards defraying its expenses, amounted to 2561*l.* 0*s.* 10*d.* on the manufactures, and 582*l.* 15*s.* 9*d.* on the wages. The net prison expense amounted to 19,194*l.* 10*s.* 8*d.*, to which is added 5180*l.* 9*s.* 7*d.* the cost of a new lodge erected under the direction of Mr. Smirke. Out of 83 convicts, *viz.*, 62 males and 21 females who had received his Majesty's pardon, between the re-opening of the prison and the 31st of December, 1827, the prisoners who have actually received gratuities for one year's good conduct, after they quitted the prison, under the regulations contained in the rules of the Penitentiary on that head, are 43; *viz.* 33 males, and 10 females; and there are eight others, *viz.* seven males and one female, who are ascertained to be in respectable situations, and going on well, though they have not claimed the reward. Two males have died since their release from the prison. Three males and four females have committed fresh offences, and three males are believed to be leading a disorderly or disreputable life; 13 males and six females are considered as doubtful characters; and one male, who is gone to sea, makes up the 83.

XVIII. ANNUAL REPORT OF THE NATIONAL VACCINE ESTABLISHMENT.

According to the last report of the National Vaccine Establishment, dated the 2nd of March, the number of persons who have died of small pox in the course of the last year, within the bills of mortality, amounts to 598; and the report states, that there is no reason to think that this distemper has abated any thing of its virulence, or that it is more controllable by the expedients of medical art than it was in the times of its more general prevalence; for that it still proves fatal to one out of three of those who take it in the natural way. The report further states, that more than 10,000 of the poor have been vaccinated in London and its neighbourhood since last year's report; and that, from the records of the last year's experience of the Small Pox Hospital, it appears that no patient admitted there under small pox, after vaccination, had been vaccinated by any officer of the national establishment; whence it is presumed that when the operation has been performed with due care and intelligence, it is much less liable to be followed by small pox. The correspondence of the establishment with various parts of the world, which is represented as having become more extensive than ever, is stated to warrant the conclusion, that there is no increase in the proportion of cases of small pox after vaccination, and that the efficacy of the vaccine lymph is not weakened or deteriorated by transmission through any number of subjects in the course of any number of years.

XIX. GOLD AND SILVER FOREIGN COINS.

A KNOWLEDGE of the relative value of foreign coins is highly important to commercial men, and to the traveller. In the following table of the different coins used among the various nations with which England has intercourse, will be found their corresponding value in English money. The method of obtaining this result is founded upon the following principle. In a coin we consider the weight and standard. By standard is meant the proportion of pure gold or silver which it contains: the rest is alloy. Thus, if we suppose a coin to contain a thousand parts of metal, of which 917 are pure gold or silver, the 83 remaining parts being alloy, the 917 represent the standard, or relative purity of the coin.

Suppose we wish to know what is the value, in English money, of the Russian imperial of 10 rubles: the weight is 13.073 gram., the standard at 917; deducting the alloy, that is, 1.08 gram., there remain, in pure gold, 11.988 grammes.

The English sovereign weighs 7.9808 gram., the standard is at 917, the alloy consequently 0.662 gram., and the weight of pure gold contained in it 7.3184 gram.

Now, by the Rule of Three, the question will thus be resolved:

7.318 gram. : 11.988 gram. :: 20 shillings : = £1 12*s.* 9*d.*

By this method, we can ascertain the relative value of all coins; but sometimes the value thus ascertained will not exactly agree with the sum allowed in exchange. This difference arises from political causes and commercial vicissitudes. Thus, for instance, the value at par of the sovereign in French money, is 25 fr. 26 c., yet it rose to 25 fr. 50 c. in the month of August last, after the change of the French ministry. This fall and rise, in the relative value of money, principally takes place whenever there is a paper currency.

A general Table of the Gold and Silver Coins of different Countries, giving their national Denominations and Value, Weight in Dwts. and Grammes, the Number of Parts of pure Metal which they contain, and their Value in English Money.*

1. AUSTRIA AND BOHEMIA.

National Denominations	dwt.	grs.	grammes.	Standard.	English Value. £	*s.*	*d.*
Gold.							
Emperor's Ducat	2	5¾	3.491	986	0	9	5
Hungarian Ducat	2	5¾	3.491	990	0	9	5¼
Half-Sovereign	3	7½	5.567	917	0	14	9
Quarter-Sovereign	1	15¾	2.7835	917	0	7	4½
Silver.							
Crown, since 1753	18	1	28.064	833	0	4	11½
Half Rix-dollar, or Florin	9	0½	14.032	833	0	2	0¾
20 Kreutzers	4	6½	6.682	583	0	0	8¼
10 Ditto	2	3¼	3.341	500	0	0	4

* The weight of the coins has been given both in *grammes* and in dwts. It is very easy for any one to convert grammes into dwts., by means of the Rule of Three, knowing that 1 lb. troy weight or 200 dwts. are equal to 373.095 grammes.

2. Baden.

	dwts.	gr.	grammes.	Standard.	Eng. Value. £.	s.	d.
Gold.							
Piece of 2 Florins	4	9	6.800	901	0	16	8¼
1 Florin	2	4½	3.400	901	0	8	4⅛
Silver.							
Piece of 2 Florins	16	2	25.450	750	0	3	3¾
1 Florin	8	1	12.725	750	0	1	3¾

3. Bavaria.

Gold.							
Carolin	6	5¼	9.744	771	1	0	4¼
Maximilian	4	4	6.496	771	0	13	7½
Silver.							
Crown	18	2	29.343	868	0	4	6
Rix-dollar of 1800	17	12	27.513	833	0	4	0½
Teston, or Kôpfstuck	4	6½	6.643	583	0	0	8¼

4. Denmark.

Gold.							
Ducat current since 1767	2	0	3.143	875	0	7	6
Ducat specie, 1791 to 1802	2	5¾	3.519	979	0	9	4¾
Christian, 1773	4	7	6.735	903	0	16	7
Silver.							
Rix-dollar, or Double Crown, of the value of 96 Danish Shillings of 1776	18	14	29.126	875	0	4	6
Rix-dollar, or Piece of 6 Danish Marks of 1750	17	6	26.800	833	0	4	0
Danish Mark of 16 Shillings of 1776	4	0	6.286	688	0	0	7½

5. France.

The money unit in France is the *franc*, which, according to the decimal system, is divided into one hundred parts, called *centimes*. In Government accounts and legal deeds, all sums must be expressed in francs and centimes; but among the people, and in the purchase of goods sold retail, and in small quantity, the denomination of *sous* is still in use. This practice does not create confusion, because the *sou* is a multiple of the *centime*,—that is, there are twenty sous to the franc, and each contains 5 cent. The two sous piece may also be called *décime*, or tenth of a *franc*.

Although the *franc* and the *livre tournois* now appear to be of equal value, there is, however, a slight difference in favour of the franc:—100 fr. = 101 livres 5 sous. Hence, if an individual had to discharge a debt contracted previously to the year VIII. of the Republic, and stipulated in livres tournois, he would be entitled, in making his payment in francs, to a deduction in the proportion above mentioned. Formerly the livre tournois was the money unit of France. Its value has varied much, although it has retained the denomination which, originally, was the expression of its nature. Under Charlemagne, in the ninth century, its weight was 12 ounces, or 1 lb. troy weight, and its value 78 liv. 17 sous

of present money. The weight and value progressively decreased down to the time of Louis XV., when it only amounted to 8 sous. Under Louis XVI. it rose again to 20 sous.

Besides the new coinage issued during the Republic, under the Empire, and since the Restoration, the old one is still in circulation. There is, however, but little of it extant. The value of the silver pieces has not only been reduced in 1810, as will be seen here, but the pieces of 24, 12, and 6 sous are not to be taken in payment, except they have preserved some part of the stamp (empreinte); consequently, all those which were defaced have been withdrawn from circulation.

There is also in France a coin composed of copper and silver, in the proportion of 4 to 1, called *Billon*, and denominated by the people "monnaie grise." Before the Revolution, there were of this mixture, pieces of *six liards*, (the French sou being divided into four liards,) and of two sous and a half, called *pieces of six blancs*: there are few of this value now extant, but there are pieces of two sous, or *décimes*.

New Coin.

Gold.

	dwt.	gr.	grammes.	Standard.	Eng. Value. £	s.	d.
20 Franc piece	4	3½	6.4516	900	0	15	10½
40	8	7	12.9032	900	1	11	8½

Silver (argent blanc).

5 Franc piece	16	1	25.000	900	0	4	0
2	6	11	10.000	900	0	1	7
1	3	5½	5.000	900	0	0	9½
½, or 50 centimes	1	15	2.500	900	0	0	4¾
¼, or 25 centimes	0	18½	1.250	900	0	0	2¼

Billon (monnaie grise.)

Piece of 0 10 centimes					0	0	0¾.89

Copper, old and new.

Décime, or 2 sous					0	0	0¾.80
Sou, or 5 centimes							
Sou, or 1 centime							

Value of the Old Coin in Francs.

	Livres.	fr.	c.	dwt.	gr.	grammes.				
Louis of	24 =	23	55	4	22	7.649	901	0	18	8⅓
Double do.	48 =	47	29	9	20	15.297	901	1	17	4⅔

Silver.

Ecu, or piece of	6 = 5	80	18	18	29.488	906	0	4	7⅙
Petit écu, or do.	3 = 2	75	9	9	14.744	906	0	2	2⅓
Piece of 24 sous	= 1	0	3	20	5.897	supposed	0	0	9½
Do. 12 sous	= 0	50	1	22	2.948	at	0	0	4¾
Do. 6 sous	= 0	25	0	23½	1.474	906	0	0	2⅜
Do. 30 sous	= 1	50	6	12	10.136	660	0	1	2¼
Do. 15 sous	= 0	75	3	6	5.068	660	0	0	7⅛

6. Hamburgh.

Gold.

Ducat ad Legem Imperii	2	5¾	3.491	986	0	9	4¾
New Town Ducat	2	5¾	3.488	979	0	9	4

	dwt.	gr.	grammes.	Standard.	Eng. Value. £.	s.	d.
Silver.							
Mark Banco (imaginary)	.....		....	...	0	1	5¾
16 Shilling Piece, Convention	5	20	9.164	750	0	1	2½
Rix-dollar Specie	18	18	29.233	889	0	4	7

7. Holland and the Netherlands.

	dwt.	gr.	grammes.	Standard.	Eng. Value. £.	s.	d.
Gold.							
Ducat	2	5¾	3.512	986	0	9	5⅝
Ryder	6	10½	9.988	920	1	5	1¼
20 Florins, 1808	9	7¾	13.659	917	1	14	2¼
10 Florins	4	15⅞	6.829	917	0	17	1⅜
10 Williams, 1818	4	7½	6.700	900	0	16	5½
Silver.							
Florin	6	22	10.597	917	0	1	8½
Escalin (6 sous)	3	4⅝	4.976	583	0	0	6
Ducaton, or ryder	20	22	32.750	941	0	5	5
Ducat, or rix-dollar	18	6	28.230	873	0	4	4

The Florin is divided into 20 Sous, and the Sou into 5 Cents.

8. Japan.

Gold.						
Old Kobang of 100 Mas				2	7	3
Half Ditto				1	3	7½
New Kobang				1	5	11
Half Ditto				0	12	10½
Silver.						
Tigo-gin of 40 Mas.				0	11	5
Half Ditto				0	5	8½
One-fourth Ditto				0	2	10¼
One-eighth Ditto				0	1	5

It has not been possible to ascertain the legal weight and title of these coins. Their value is, therefore, only approximate.

9. Lombardo-Venetian.

	dwt.	gr.	grammes.	Standard.	Eng. Value. £.	s.	d.
Gold.							
Sovereign, 1823	8	18	11.332	900	1	7	1
Half Ditto	4	9	5.666	900	0	13	6½
Silver.							
Crown	17	7¾	25.986	900	0	4	1½
Half-Crown, or Florin	8	15⅞	12.993	900	0	2	0¾
Austrian Livre	2	18⅔	4.331	900	0	0	8¼

10. Mogul (East Indies).

	dwt.	gr.	grammes.	Standard.	Eng. Value. £.	s.	d.
Gold.							
Mohur of Bengal	7	23		993	1	13	8
Ditto of Bombay	7	10½		953	1	10	1
Gold Rupee, Bombay	7	11		922	1	9	2
Ditto Madras	7	12		916	1	9	3
Star Pagoda, Madras	2	4½		792	0	7	6
Silver.							
Rupee, Sicca	7	12		979	0	2	0¾
Ditto Arcott	7	9		941	0	1	11¾
Ditto Bombay	7	11		926	0	1	11
Ditto Broach	7	10		883	0	1	9

11. Naples.

Gold.

	dwts.	grs.	grammes.	Standard.	Eng. Value. £	s.	d.
New Ounce of 3 Ducats .	2	10¼	3.786	996	0	10	5¾

Silver.

12 Carlini, 1804 . . .	17	15	27.533	833⅓	0	4	1¼
Ducat of 10 Carlini, 1784 .	14	16	22.810	839½	0	3	4¼
2 Carlini, 1804 . .	2	22	4.588	833⅓	0	8	0
1 Ditto, 1804 . . .	1	11	2.294	833⅓	0	0	4
Ducat of 10 Carlini, 1818 .	14	18	22.943	833	0	3	4¼

12. Papal States.

Gold.

Pistola of Pius VI. and VII. .	3	12⅛	5.471	916⅔	0	13	11¼
Half Ditto	1	18⅛	2.735	916⅔	0	6	11½
Zecchino, 1769	2	4½	3.426	1000	0	9	4½
Half Ditto	1	2¼	1.713	1000	0	4	8¼

Silver.

Crown of 10 Paoli . .	17	1	26.437	916⅔	0	4	3¼
Testone of 3 Paoli . .	5	2	7.932	Do.	0	1	3½
——— 20 Paoli . .	3	10	5.287	...	0	0	10½
Paolo	1	17	2.644	...	0	0	5¼

The paolo is divided into 10 bajocchi; the crown into 10 paoli.

13. Parma.

Gold.

Zecchino	2	5¾	3.468	1000	0	9	5⅜
Pistola of 1784	4	19⅚	7.498	891	0	18	3
——— of 1786 . . .	4	14	7.141	891	0	17	4½
40 Lire of Maria Louisa since 1815	8	7¾	12.903	900	1	11	9
20 Ditto	4	3⅞	6.451	900	0	15	10½

Silver.

Ducat of 1784	16	11	25.707	906	0	4	1¼
Piece of 3 Lire . .	2	8¾	3.672	833	0	0	6½
5 Lire of Maria Louisa .	16	0	25.000	900	0	3	11½

14. Persia.

Gold.

Rupee	The weight and title have not been ascertained.				1	9	1¾
Half Ditto					0	14	6¾

Silver.

Double Rupee of 5 Abassis					0	3	10½
Rupee					0	1	11½
Abassi					0	0	9
Mamoudi					0	0	4½
Larin					0	0	9½

15. Portugal.

Gold.

	dwt.	grs.	grammes.	Standard.	Eng. £.	Eng. s.	Eng. d.	Value.
Lisbonine, or Moidore of 4800 reis	6	22	10.752	917	1	6	11¼	
Half Ditto of 2400 reis	3	11	5.376	917	0	13	5½	
Quarter ditto of 1200 reis	1	17½	2.688	917	0	6	8¾	
Portugese, or Moiadobra of 6400 reis	9	5⅓	14.334	917	1	15	11	
Half Portuguese of 3200 reis	4	14⅔	7.167	917	0	17	10½	
Piece of 16 Testons, or 1600 reis	2	7⅓	3.583	917	0	8	11¼	
Do. of 12 Tes. or 1200 reis	1	17⅚	2.538	917	0	6	4¼	
Do. of 8 Tes. or 800 reis	1	3⅔	1.792	917	0	4	5⅝	
Cruzada of 480 reis	0	16¼	1.045	917	0	2	7¼	

Silver.

New Cruzada of 480 reis	9	1	14.633	903	0	4	11	

16. Prussia.

Gold.

Ducat	2	5¾	3.491	979	0	9	4	
Frederick	4	7	6.689	903	0	16	6	
Half Ditto	2	3½	3.345	903	0	8	3	

Silver.

Rix-dollar, or thaler of 30 Silbergroschen of 1823	14	6½	22.272	750	0	2	11¼	
Piece of 5 Silbergroschen	2	9	3.712	750	0	0	5¾	
Silbergros	.....		2.192	208	0	0	0¾	

17. Ragusa.

Silver.

Ragusan, or Talaro	18	22	29.400	600	0	3	0	
Half Ditto	9	11	14.700	600	0	1	6	
Ducat	8	19	13.666	450	0	1	1	
12 Grossettes	2	9½	4.140	450	0	0	4	
6 Ditto	1	4¾	2.070	450	0	0	2	

18. Russia.

Gold.

Ducat from 1755 to 1763	2	5¾	3.495	979	0	9	4¼	
—— of 1763	2	5¾	3.473	969	0	9	2¼	
Imperial of 10 Rubles. from 1755 to 1763	12	19	16.585	917	2	1	6½	
Half Ditto	6	9½	8.293	917	1	0	9¼	
Imperial of 10 Rubles since 1763	7	17¼	13.073	917	1	12	9	
Half Ditto	3	20½	6.536	917	0	16	4½	

Silver.

Ruble of 100 Copecks from 1750 to 1762	18	1	25.870	802	0	3	7¾	
Ditto from 1763 to 1807	15	10	24.011	750	0	3	2	

19. Sardinia.

Gold.

	dwt.	grains.	grammes.	Standard.	Eng. Value. £	s.	d.
Carlin, since 1768	10	7¾	16.056	892	1	19	1½
Half Ditto	5	2⅜	8.028	892	0	19	6¾
Pistola	5	10⅛	9.118	906	1	2	6¾
Half Ditto	2	17⅙	4.559	906	0	11	3¼

Silver.

Crown, since 1768	15	2½	23.590	896	0	3	8¾
Half-crown	7	13¼	11.795	896	0	1	10¼
Quarter Ditto	3	18⅝	5.897	896	0	11	0
New Crown of 1816	16	0	25.000	900	0	3	11¼

20. Savoy and Piedmont.

Gold.

Zecchino	2	5¾	3.468	1000	0	9	5¾
Double new Pistola of 24 livres	6	4½	9.620	906	1	3	9½
Half Ditto	3	2¼	4.810	906	0	11	10⅝
New Pistola of 20 livres, 1816	4	3⅜	6.451	900	0	15	10
Carlino, since 1755	30	22⅝	48.100	906	5	19	0
Half Ditto	15	11⅓	24.050	906	2	19	6
Zecchino of Genoa	2	5¾	3.487	1000	0	9	6¼

Silver.

Crown of 6 Livres since 1755	22	14	35.118	906	0	5	7¼
Half-crown	11	7	17.559	906	0	2	9½
Quarter Ditto, or 30 Sous	5	15½	8.779	906	0	1	4¾
One-eighth Ditto, or 15 Sous	2	19¾	4.389	906	0	0	8½
New Crown of 5 Livres, 1816	16	1½	25.000	900	0	3	11½

21. Saxony.

Gold.

Ducat	2	5¾	3.491	986	0	9	5
Double Augustus, or 10 Thalers	8	13$\frac{11}{12}$	13.340	903	1	12	11
Augustus, or 5 Thalers	4	6$\frac{10}{12}$	6.670	903	0	16	5½
Half Ditto	3	3$\frac{5}{12}$	3.339	903	0	8	2¾

Silver.

Rix-dollar Specie, or Convention, since 1763	18	1	28.064	833	0	4	1¼
Half Ditto, or Florin	9	0½	14.032	833	0	2	0½
Thaler of 24 Groschen (imaginary coin)	.....		.....	...	0	3	1
Groschen, 24 to the Thaler, 32 to the Rix-dollar	1	3⅓	1.982	368	0	0	1½

22. Sicily.

Gold.

Ounce, 1748	2	20½	4.399	906	0	10	10¼

Silver.

Crown of 12 Tarins	17	14	27.533	833⅓	0	4	0½

23. Spain.

Gold.

	dwt.	grs.	grammes.	Standard.	Eng. Value. £.	s.	d.
Doubloon of 8 Crowns, 1772 to 1786	17	9	27.045	901	3	6	7
Doubloon of 4 Crowns	8	16½	13.522	901	1	13	3½
——— 2 Crowns	4	8¼	6.761	901	0	16	7¾
Half-pistol, or Crown	2	4⅛	3.380	901	0	8	3⅞
Doubloon of 8 Cr. since 1786	17	9	27.045	875	3	4	8
——— of 4 Crowns	8	16½	13.522	875	1	12	4
——— of 2 Crowns	4	8¼	6.761	875	0	16	2
Half-pistol, or Crown	2	4⅛	3.380	875	0	8	1

Silver.

Piaster, since 1772	17	8	25.045	903	0	4	3¾
Real of 2, or Peseta, or one-fifth of a Piaster	3	18	5.971	813	0	0	10½
Real of 1, or Half Peseta, or one-tenth of a Piaster	1	21	2.985	813	0	0	5¼
Reallillo, or one-twentieth of a p.	0	22½	1.492	813	0	0	2½

These three last coins have currency in the Peninsula only.

24. Sweden.

Gold.

Ducat	2	5	3.482	976	0	9	3¼
Half Ditto	1	2½	1.741	976	0	4	7½
Quarter Ditto	0	13¼	.870	976	0	2	3⅝

Silver.

Rix-dollar of 48 shillings, from 1720 to 1802	18	17	29.508	878	0	4	6
Two-thirds of Rix-dol. of 32 sh.	12	11⅓	19.672	878	0	3	0
One-third, or 16 shillings	6	5⅔	9.836	878	0	1	6

25. Switzerland.

Gold.

32 Franken Piece	8	22	15.297	904	1	17	9
16 Ditto	4	11	7.648	904	0	18	10½
Ducat of Zurich	2	5¾	3.491	979	0	9	5
——— Berne	2	5⅓	3.452	979	0	9	2⅝
Pistole of Berne	4	21	7.648	902	0	18	10

Silver.

Crown of Basle of 30 Batz, or 2 Florins	15	1	23.386	878	0	3	7¼
Half Crown, or Florin	7	12½	11.693	878	0	1	9¼
Franken of Berne, since 1803	4	17¼	7.512	900	0	1	2¼
Crown of Zurich of 1781	16	0	25.057	844	0	3	8½
Half, or Florin, since 1781	8	0	12.528	844	0	1	10¼
Crown of 40 Batz of Basle and Soleure, since 1798	18	23	29.480	901	0	4	8
Piece of 4 Franken of Berne, 1799	18	22	29.370	901	0	4	8
Ditto of 4 Franken of Switzerland of 1803	18	23	30.049	900	0	4	9
Ditto of 2 Franken of Switzerland of 1803	9	11½	15.025	900	0	2	4½
Ditto of 1 Franken	4	17¾	7.512	900	0	1	2½

26. Turkey.

Gold.

	dwt.	grs.	grammes.	Standard.	Eng. Value. £.	s.	d.
Zecchin Zermahboub of Sultan Abdoul Hamet, 1774	1	16	2.642	958	0	6	11
Half Ditto	0	20	1.321	958	0	3	5½
Roubbié, or ¼ Zecchin Fondoukli	0	13⅔	0.881	802	0	1	11
Zecchin Zermahboub of Sel. III.	1	16	2.642	802	0	5	9½
Half Ditto	0	20	1.321	802	0	2	4¾
Quarter Ditto	0	10	0.660	802	0	1	2¼

Silver.

Altmichlec of 60 Paras, since 1771	15	50	28.822	550	0	2	9½
Yaremlec of 20 Paras, or 60 Aspres	.....		.....	...	0	0	9¼
Rouble of 10 Paras, or 30 Aspres	.....		.....	...	0	0	4½
Aspre, 120 in the Piastre	.....		.....	...	0	0	0
Piastre of 40 Paras	.....		.....	500	0	1	7
Piece of 5 Piastres	.....		.....	...	0	3	3¼

27. Tuscany.

Gold.

Ruspone, 3 Zecchini, with the lily	6	17¼	10.464	1000	1	8	7
One-third Ruspone, or Zecchino	2	5¾	3.488	1000	0	9	6⅓
Half Zecchino	1	2¾	1.744	1000	0	4	9
Zecchino with effigy	2	5¾	3.418	1000	0	9	6⅓
Rosina	4	11½	6.976	896	0	17	1
Half Ditto	2	5¾	3.488	896	0	8	6½

Silver.

Francesconi of 10 Paoli, or Crown of 10 Paoli	17	13½	25.507	917	0	4	5¼
Piece of 5 Paoli	8	18¾	12.753	917	0	2	2½
—— 2 Paoli	3	6⅔	5.501	917	0	10	0
—— 1 Paoli	1	15¼	2.751	917	0	0	5

28. Venice.

Gold.

Zecchino	2	5¾	3.484	1000	0	9	6
Half Ditto	1	2⅞	1.742	1000	0	4	9
Ozella	8	19	13.666	1000	1	17	4
Ducat	1	9⅔	2.175	1000	0	5	11¼
Pistola	4	8½	6.764	917	0	15	11⅓

Silver.

Ducat of 8 Livres	14	15⅓	22.777	826	0	3	3⅚
Crown of the Cross	20	10	31.788	948	0	5	3¾
Ducatoon	18	0	27.914	948	0	4	8
Talaro	18	13	28.990	826	0	4	2⅔
Ozella	6	8	9.843	948	0	1	7⅔

29. United States of America.

Gold.

	dwt.	grs.	grammes.	Standard.	Eng. Value. £.	s.	d.
Double Eagle of 10 Dollars	11	6	17.480	917	2	3	9¾
Eagle of 5 Dollars . . .	5	15	8.740	917	1	1	10¾
Half Eagle of 2½ Dollars .	2	19½	3.370	917	0	10	11¼

Silver.

Dollar	17	10	27.000	903	0	4	3½
Half Dollar	8	17	13.500	903	0	2	1¾
Quarter Dollar	4	8½	6.750	903	0	1	0¾

XX. FRENCH MEASURES AT PRESENT IN USE,

Compared with each other, and with the English Imperial.

The measures of France have been reduced to a scientific standard nearly thirty years. The ancient system presented no uniformity; there was no relation between the *pied*, used as the unit of the measure of length, and the *livre* as that of weight; and even although those measures bore the same denominations in all provinces, they were very different in their proportions in particular districts. Similar objections lay against the system of weights and measures in England before the introduction of "the Imperial Measure." Local consumers in France, as well as in England, did not feel the whole disadvantage which arose from the variety of measures in the same country. But those who made large purchases—merchants, who either sent out their own produce to another part of the country, or imported the manufactures of their distant fellow-countrymen to their own districts—often experienced great difficulties in converting to their own local standard the quantities expressed according to another rate. The proportion which one standard bore to another was not always easily ascertained; and when it was, the calculations to be made were long and difficult, and could not always give a very accurate result.

One of the first objects which engaged the attention of the General States, assembled in 1788, was to find a remedy for this defect. It was then agreed, that some principle should be established, on which a new system should be founded. It was desirable to find a natural and invariable standard; and it may be observed, that mankind, in all ages, have been endeavouring to obtain some such result, though they have proceeded without adequate scientific knowledge. Thus, in measures of length, we have a *barley-corn*, a *foot*, a *fathom*, adopted as standards. This was an approach to a natural system; although it is quite evident that a grain of corn, or the human foot, or the distance a man can extend his arms, must be as variable as can be imagined. There was an attempt to establish a relation between the standard of measure and of weight; thus the *barley-corn* of length, and the *grain* of weight, are the same imperfect units. Without science it

is impossible to find an invariable standard in nature; for there is such infinite variety in the individual character of her productions, that no portions of animal or vegetable matter can be found of equal and unchanging dimensions. It is thus that measures have become arbitrary, because there was no universal standard to which they could be referred. It was the object of the French to establish one.

The Académie des Sciences was first requested to determine the length of a pendulum, vibrating according to given rules, under certain circumstances. But this was objected to; because it was thought (whether justly or not, it is needless for our present purpose to inquire) that a result, depending upon the weather and an arbitrary division of time, (the 86,400th part of the day,) was not susceptible of the requisite accuracy. It was then agreed to adopt the 10,000,000th part of the fourth part of the meridian, or of the quadrant comprised between the North Pole and the Equator, for the unit of this measure of length, and to derive all others from this standard. For the purpose of obtaining the value of the unit, it was resolved, that an arc of the meridian should be actually measured. MM. Mechain and Delambre were named by the Académie des Sciences to ascertain, with the utmost precision, the length of the arc comprised between Dunkirk and Rhodes, a space of about 550,000 toises (1,000,000 yards, or about 570 miles). M. Mechain died in Spain from excessive fatigue, in attempting to carry his operations further than had been required. The result of the operations in which these scientific persons were engaged, was, that a quadrant of a meridian lying between the North Pole and the Equator measured 5,130,470 toises, or 10,936,578 English yards; and the ten-millionth part of this quantity, which was to form the standard unit, was therefore equal to 3 pieds 11 $\frac{296}{1000}$ lignes, or 1.093578 English yards. The unit of the measure of length thus ascertained was denominated a Mètre; and being established as the legal standard, the Academy proceeded to devise a new nomenclature. The words deci (tenth of), centi (hundredth of), milli (thousandth of), being added to that expressing the unit, served to denominate the subdivisions; and the words deca (ten), hecto (one hundred), kilo (thousand), myria (ten thousand), expressed the multiple of the unit.

Thus, the *mètre* contained 10 *décimètres;* the *décimètre* 10 *centimètres*; the *centimètre* 10 *millimètres.*

The *décamètre* expressed 10 *mètres;* the *hectomètre* 100; the *kilomètre* 1000; and the *myriamètre* 10,000.

Again, the *litre,* adopted in the place of the *pinte,* was divided into 10 *decilitres;* and its multiples were the *décalitre, hectolitre, kilolitre,* &c.

Such was the principle of the new system proposed by the Académie des Sciences; the adoption of which was enjoined by a law, enacted in the eighth year of the Republic, when the following measures were established:—

ITINERARY MEASURES.	THEIR VALUE.
1 Myriamètre	10,000 mètres.
1 Kilomètre	1,000 mètres.
1 Decamètre	10 mètres.
1 Mètre	Fundamental unity of all weights and measures. The 1-10,000,000th part of the quarter of the meridian of the earth.
MEASURES OF LENGTH.	
1 Decimètre	1-10th of a mètre.
1 Centimètre	1-100th of a mètre.
1 Millimètre	1-1000th of a mètre.
LAND MEASURES.	
1 Hectare	10,000 square mètres.
1 Are	100 square mètres.
1 Antiare	1 square mètre.
CUBIC MEASURES FOR LIQUIDS.	
1 Decalitre	10 cubic decimètres.
1 Litre	cubic decimètre.
1 Decilitre	1-10th of a cubic decimètre.
CUBIC MEASURES FOR DRIED ARTICLES.	**THEIR VALUE.**
1 Kilolitre	1 cubic mètre, or 1000 cubic decimètres.
1 Hectolitre	100 cubic decimètres.
1 Decalitre	10 cubic decimètres.
1 Litre	cubic decimètre.
SOLID MEASURES.	
1 Stere	1 cubic mètre.
1 Decistere	1-10th of a cubic mètre.
WEIGHTS.	
1 Millier	1000 kilogrammes (weight of a tun of sea water.)
1 Quintal	100 kilogrammes.
1 Kilogramme	Weight of a cubic decimètre of water at the temperature of four degrees above melting ice.
1 Hectogramme	1-10th of a kilogramme.
1 Decagramme	1-100th of a kilogramme.
1 Gramme	1-1000th of a kilogramme.
1 Decigramme	1-10,000th of a kilogramme.

However valuable the simplicity of this system, there has been great difficulty in making the change universal.

Although the agents of Government and the higher classes in the commercial world soon understood and adopted it, the smaller tradesmen and labourers were unwilling to charge their memory with names which sounded so unlike their own accustomed language. These prejudices have rendered a toleration of the names of the old measures necessary in the retail purchase and sale of goods; but, at the same time, by a slight alteration, the value of those measures has been so fixed as to bear certain definite proportions towards the standards of the decimal system. Thus, for instance, in allowing carpenters, joiners, and masons to make use of the *toise* and its subdivisions, its length has been fixed at 2 mètres exactly, by adding 2½ hundredth parts to its former dimensions in Paris. It has

also been required that measures should bear both graduations, that is, that the carpenter's rule should have on one side the metrical divisions, and on the other those of the toise.

The old and new systems being thus combined in France, it will be requisite, for practical purposes, to detail in this article the mode in which they each operate, comparing one with the other, and both with the English Imperial Standard.

1. *Measures of Length, and Itinerary Measures.*

Long Measure.

The unit of the long measure (used for the measure of cloth, linen, &c.) is the *mètre*. It is divided into 10 *decimètres*, and each *decimètre* into 10 *centimètres*.

Their relative length with the ancient measure, and the English measure, is as follows:—

		pieds.	pouces.	lignes.		feet.	inches.
1 mètre	=	3	0	11.296	=	3	3.370
1 decimètre	=	0	3	8.330	=	0	3.937
1 centimètre	=	0	0	4.433	=	0	0.394

By a government regulation, dated 28th March, 1812, the use of the ell (aune) and its former division of halfs, quarters, eighths, is tolerated, as far as regards the name, for the measurement of cloths; but it is required that the measure shall bear on one of its sides the corresponding divisions in mètres, decimètres, and centimètres, in order that both the purchaser and dealer may be enabled to convert one measure into the other. Considering, also, that the ell used in the different parts of France varied in length, the same regulation fixes it to 12 decimètres, or 3 pieds, 8 pouces, 3 lignes, .956 old measure; equal 3 feet 11.244 inches English. The divisions of the ell are as follows:—

		met.	cent.		foot.	inches.
1 half	=	0	60	..	1	11.622
1 quarter	=	0	30	..	0	11.811
1 eighth	=	0	15	..	0	5.905

It is also permitted to be divided into thirds, sixths, and twelfths.

For the measurement of carpentry and masonry, the French government has tolerated the use of the name of the toise and its subdivisions. But to guard against the confusion and difficulty which would arise in consequence of the toise not having the same length in all parts of the kingdom, it was fixed at two mètres exactly, making an increase of 2¼ per cent. on the 'toise of Paris.' This new toise is divided as formerly into 6 feet, each foot into 12 inches, and the inch into twelve lines. On the other side the mètre and its divisions are marked, so that the conversion of the one into the other measure may easily be made, and either be used as may be wished.

Relative length of the toise, mètre, and English measure.

1 toise = 2 mètres = 6 feet, 6.42 in.

The square toise, *used formerly*, bears the following proportions to the mètre and the English measure.

		Mètres carrés.		Yds.	English feet.	inches.
1 toise quarrée	=	3.7987	=	3	1	84.096
1 pied quarré	=	0.4220	=	...	3	29.344

Itinerary Measures.

Distances are expressed by myriamètres (10,000 mètres), and kilomètres (1000 mètres). The latter is considered as the minute of the new geographical degree, and is equivalent to 513 toises old measure, and 1093 yards, 1 foot, 10 inches, English. The lieue, by which distances were reckoned in France, was not the same in every province; it varied a great deal in its length: there are four, however, the proportions of which were determined:—1. the *lieue de poste*, to regulate the charges on travellers; 2. the *lieue marine*, twenty in the degree, adopted by geographers; 3. the *lieue commune*, twenty-five in the degree; 4. the *lieue moyenne*.

	Toises, old measure.		Mètres.		English Yds.	ft.	in.
Lieue de poste	= 2000	=	3898	=	4262	2	6
Lieue marine, 20 in the degree.	= 2850	=	5554.75	..	6074	2	
Lieue commune, 25 in the degree.	= 2280	=	4443.80	..	4859	0	4
Lieue moyenne	= 2565	=	5000	..	5470		

The government stipulates that all distances, especially in everything relating to the repairs or making of roads, shall be expressed in myriamètres, yet the mile stones (bornes) which we see on the roads are intended to mark distances of 1000 toises.

We subjoin, as we shall do throughout this paper, the English Imperial measures, reduced into the French metrical standard. We take them from the 'Annuaire' of the Royal and Central Society of Agriculture of Paris, for 1829.

English.	French.
1 Inch (1-36th of a yard) . . .	2.539954 centimètres.
1 Foot (1-3d of a yard) . . .	3.0479449 decimètres.
Yard imperial	0.91438348 mètres.
Fathom (2 yards)	1.82876696 mètres.
Pole or perch ($5\frac{1}{2}$ yards)	5.02911 mètres.
Furlong (220 yards)	201.16437 mètres.
Mile (1760 yards)	1609.3149 mètres.

2.—*Land Measures.*

The unit of Land Measures is a square, each side of which is 10 mètres in length, and called *Are*. It is subdivided into 100 parts, called *Centiares*, each a square mètre. There is a larger measure denominated *Hectare*, containing 100 ares, and answering to a square, each side of which is 100 mètres.

Relative Proportions.

	Old toises, sq.	Usuelles, t. sq.	Acres.	Rood.	Poles.	Yards.
1 Hectare	2632.450	2500.00 =	2	1	35	23
1 Are	26.324	25.00 =	0	0	3	28
1 Centiare	0.263	0.25 =	1 sq. yd.	1.76 ft.		

English.		French.
1 Yard square	. . . . .	0.836097 mètre square.
1 Rod (square perch)	. . . .	25.291939 mètres square.
1 Rood (1210 yards square)	. . .	10.116775 ares.
1 Acre (4840 yards square)	. .	0.404671 hectares.

Before the establishment of the decimal system, the *Arpent* was generally used for the measurement of land; Normandy being the only province where land was divided into acres. But this, like all other measures, was not the same everywhere. It varied in its proportions, not only in every province, but even in the same district; and, among others, the *Commune of Brie-sur-Marne* is cited as having had five different arpens. However, four only were more generally known: they were—1. Arpent d'Ordonnance, used to measure crown-lands. 2. The Paris Arpent. 3. The arpent used in Champagne, Orleanais, Poitou. 4. The acre used in Normandy. They differed in their dimension, as follows:—

				Hectares.	Eng. sq. yd.
1. Ordonnance					
= 100 perches, poles of	484	square feet	(22 by 22) =	0.5107	6107
2. Paris					
= 100 do.	324	do.	(18 by 18) =	0.3419	4089
3. Champagne					
= 100 do.	400	do.	(20 by 20) =	0.4221	5048
4. Normandy					
= 4 vergées, rods, or 160 perches of	484 ft.		(22 by 22) =	0.8170	9770

3.—*Solid Measures.*

The measure in use for the sale of timber is called Stère, and is a cubic mètre. It is required of all timber-merchants to adopt it; nevertheless, in the sale of fuel, the old measures are yet very general. There were four more commonly known, which were—1. Voie de Paris; 2. Corde of Royal Forests; 3. Corde de Grand Bois, and 4. Cordes de Port.

Relative Dimensions.

Breadth.	Height.	Length.		Stère.	Feet Eng.
1.—4 feet,	4 feet,	3 f. 6 p.	=	1.920	20.6675
2.—8 —	4 —	3 6	=	3.840	41.3350
3.—8 —	4 —	4 0	=	4.387	47.2219
4.—8 —	5 —	3 6	=	4.799	51.6686

4.—*Measures of Capacity.*

Liquid and Dry Measures.

The unit of these measures is the *litre*, equivalent to 1 cubic decimètre. The decalitre contains 10 litres, and the hectolitre 100. Their proportions with the English measure are as follows:—

1 litre = 1.761 pint; 1 deca. = 2.201 galls.; 1 hecto. = 22.010 galls.

The government has also, in this particular, allowed the use of ancient denominations and subdivisions in the sale of the necessaries of life, but they have, as in the other cases, regulated their proportions by those of the metrical litre.

Dry and Heaped Measure.

The *Boisseau usuel*, such as its dimensions are now fixed, is smaller than the former, called Boisseau de Paris, by $\frac{1}{25}$: its sub-

divisions called demi-boisseau, quart de boisseau, must have their relative capacity in litres written on them:—

	Litres.		Galls.	Qts.		
Double Boisseau	= 25	—	= 5	2		
Boisseau	= 12	50	= 2	3	Pint.	Gills.
½ Do.	= 6	25	= 1	1	1	
¼ Do.	= 3	12	= 0	2	1	2

This measure serves for the sale of corn, coals, salt, lime, &c. Its form and dimensions are fixed by a regulation, dated 18th of December, 1812.

Liquid Measure.

The government has allowed that, for the retail sale of wine, vinegar, brandy, milk, the litre should be divided into ½ ¼ ⅛ 1/10, as the pint was formerly; but, at the same time, it has insisted upon the litre being the only denomination used. Great confusion would have arisen if the merchant had been allowed to adopt a unit different from the one used by the excise officers. It is directed that all casks and barrels shall bear, in legible characters, the number of litres they contain.

The government has also determined, in the most precise manner, the form and dimensions of vessels employed in the retailing of wine and spirits. They are to be made of pewter, not having more than from 165 to 180 parts of alloy. Their form is to be cylindrical, in height double to their diameter.

The litre is a little larger than the "*pinte de Paris*," it is equal to 1.074 pinte; it contains, as we have already seen, 1.761 English pint.

The Tonneau de Bordeaux contains 931.318 litres, or 1640 pints English.

English.	French.	
1 Pint (1-8th of a gallon)	0.567932	litre.
1 Quart (1-4th of a gallon)	1.135864	litre.
1 Gallon imperial	4.84345794	litres.
1 Peck (2 gallons)	9.0869159	litres.
1 Bushel (8 gallons)	36.347664	litres.
1 Sack (3 bushels)	1.09043	hectolitre.
1 Quarter (8 bushels)	2.907813	hectolitres.
1 Chaldron (12 sacks)	13.08516	hectolitres.

5.—*Weight.*

The unit used in weighing is the kilogramme. It has been fixed by, and is equal to, the specific weight of the distilled water contained in one cubic decimètre.

The centigrade thermometer being at 4 degrees (3.937079 inches English), about 40 of Fahrenheit, it has been ascertained by repeated and elaborate experiments, conducted by M. Lefèvre Gatineau, that, at that temperature, water had its maximum of density, and is the only fluid whose densities are uniform in similar temperatures.

The kilogramme was found to be equal to 2 livres, 5 gros, 35 grains, 15/100 poids de marc, and to 2 lbs. 8 oz. 3 dwt. 6.355 grains troy weight, and 2 lbs. 2 oz. 4 drams, 16 grains avoirdupois English.

Bread, meat, butter, and most things of daily consumption, are sold by the weight, and generally in small quantities. Here, therefore, greater difficulties arose in establishing the decimal system. It was found impossible to make the purchasers, mostly composed of the lowest classes, understand the new nomenclature and its subdivisions. The old denomination of toise has been tolerated, taking the kilogramme for its basis. The kilogramme is divided into two livres, the livre is subdivided into 16 ounces, the ounce into 8 gros, and the gros into 72 grains.

This new livre has been found to exceed the old one (poids de marc) by $\frac{2}{1000}$, so that to reduce kilogrammes into old measure, you have only to multiply by 2, and add $\frac{2}{1000}$.

English Troy.	French.	
1 Grain (1-24th of a pennyweight) .	0.06477	gramme.
1 Pennyweight (1-20th of an ounce)	1.55456	gramme.
1 Ounce (1-12th of 1 pound troy) .	31.0913	grammes.
1 Pound troy imperial	0.3730956	kilogramme.
English Avoirdupois.	**French.**	
1 Drachm (1-16th of an ounce) .	1.7712	gramme.
1 Ounce (1-16th of a pound) . .	28.3384	grammes.
1 Pound avoirdupois imperial . .	0.4534148	kilogramme.
1 Hundred weight (112 pounds) . .	50.78246	kilogrammes.
1 Ton (20 hundred weight) . . .	1015.649	kilogrammes.

XXI. SAVINGS BANKS.

Having given, in our former Companion, a general view of these valuable Establishments, and the Rules by which they are now governed, we are induced to pursue the subject, by printing the following short summary of the routine of business and present classification of deposits and general result of the Bank carried on at 50, Southampton Row, Bloomsbury.

This Bank was established on the 10th of February, 1817, and is open to the public on Saturday evenings from seven till nine, and on Monday mornings from nine till eleven o'clock; the rate of interest allowed is 3*l.* 8*s.* 5¼*d.* per cent. per annum, (being the highest rate authorised to be paid by Act of Parliament); and the following is a classification of the depositors, and of the state of the Accounts as submitted to the Trustees and Managers at an Annual General Meeting held on Tuesday, the 10th of February, 1829, viz.

Classification of Depositors who have opened Accounts.

	From 10th Feb. 1817, to 19th Nov. 1827.	From 19th Nov. 1827, to 17th Nov. 1828.	Total.
Domestic Servants . .	6954 ...	891 ...	7845
Persons engaged in Trade, Mechanics, and Manufactures .	7248 ...	950 ...	8198
Labourers and Porters . .	583 ...	82 ..	665
Minors	1327 ...	219 ...	1546
Friendly and Charitable Societies	51 ...	2 ...	53
Persons not classed, viz. Widows, Teachers, Sailors, Soldiers, &c.	2755 ...	316 ..	3071
	18,918	2460	21,378

Deposits made during one year, viz. from 19th Nov. 1827 to 17th Nov. 1828.

Deposits of 1*s.* and not exceeding	£1	. .	4879		
Above	£1	„	5	. .	5487
„	5	„	10	. .	2357
„	10	„	20	. .	1396
„	20	„		. .	1039
			Total		15,158 Deposits

Accounts remaining open on the 17th November, 1828.

4558	whose respective balances on the 17th Nov. 1828, including interest, did not exceed	£20 each	£31,179	15	7
2360	ditto, above £ 20 and not exceeding	50 „ .	71,831	18	6
1038	ditto . 50 „	100 „ .	70,604	12	1
304	ditto . 100 „	150 „ .	36,805	6	5
120	ditto . 150 „	200 „ .	20,375	12	4
87	ditto . 200	.	19,517	11	11
8	Friendly Societies	.	819	1	9
8475	Accounts amounting to		£251,133	18	7

Total Amount of Capital in each successive year, from the commencement on the 10th of February, 1817.

Year ending 1818 ..	£12,540	Year ending 1824 ..	£183,013
„ 1819 ..	39,915	„ 1825 ..	236,825
„ 1820 ..	47,404	„ 1826 ..	203,426
„ 1821 ..	64,412	„ 1827 ..	228,744
„ 1822 ..	94,403	„ 1828 ..	251,133
„ 1823 ..	120,670		

XXII. BILL OF MORTALITY FOR LONDON.

The following is a general bill of all the christenings and burials within the city of London and Bills of Mortality, from December 13, 1827, to December 12, 1828:—

	Christened.	Buried.
In the 97 Parishes within the Walls	988	1125
In the 17 Parishes without the Walls	4922	3853
In the 29 Out-Parishes in Middlesex and Surrey	16300	12832
In the 10 Parishes in the City and Liberties of Westminster	4335	3899

Christened { Males.. 13360 / Females 13185 } 26545 | Buried { Males..11112 / Females 10597 } 21709

Whereof have died,

Under Two Years 6389	Thirty and Forty. 1790	Seventy & Eighty 1540
Betw. Two & Five 2326	Forty and Fifty.. 1985	Eighty and Ninety 615
Five and Ten... 878	Fifty and Sixty .. 1845	Ninety & a Hundred 100
Ten and Twenty . 861	Sixty and Seventy 1891	A Hundred & Seven 1
Twenty and Thirty 1488		

Decrease in the burials reported this year 583.

*** We are endeavouring to prepare an article on the Bills of Mortality for a future Companion; for, imperfect as they are, they still afford some valuable materials for computations on the duration of life. We think it right to mention, that even these documents are not preserved for reference so as to be accessible. There is not a series in the British Museum.

XXIII. CONSUMPTION OF COALS IN LONDON.

A STATEMENT of the adjusted Importation of COALS to London since 1801, and the probable Population in each year, for the sake of showing the consumption per head. The consumption in 1801 appears small, because the Import of 1800 was very large. (From Mr. Charles Perkins' Evidence before the Lords' Committee.)

	Chaldrons of Coals.	Population.		Chaldrons per Head.
1801	859,738	818,129	Census of 1801 .	1.05
1802	881,031	831,628	. . . .	1.06
1803	902,324	845,127	. . . .	1.07
1804	923,617	858,626	. . . .	1.07
1805	944,910	872,125	Presumed annual Rate	1.08
1806	966,203	885,624	of Increase about	1.09
1807	987,496	899,123	1.65 per cent	1.09
1808	1,008,789	912,622	. . . .	1.105
1809	1.030,082	926,121	. . . .	1.112
1810	1,051,375	939,620	. . . .	1.118
1811	1,072,668	953,276	Census of 1811 .	1.12
1812	1,093,959	972,184	. . . .	1.125
1813	1,115,252	991,249	. . . .	1.125
1814	1,136,546	1,010,314	. . . .	1.124
1815	1,117,034	1,029,379	Presumed annual Rate	1.08
1816	1,149,650	1,048,444	of Increase about	1.09
1817	1,182,266	1,067,509	2 per Cent.	1.107
1818	1,214,882	1,086,574	. . . .	1.118
1819	1,247,498	1,105,639	. . . .	1.127
1820	1,280,114	1,124,704	. . . .	1.18
1821	1,312,730	1,144,531	Census of 1821 .	1.146
1822	1,345,345	1,163,596	. . . .	1.156
1823	1,377,961	1,182,661		
1824	1,410,577	1,201,726	Presumed that the	
1825	1,443,193	1,220,791	same Rate of an-	
1826	1,475,809	1.239.856	nual Increase has	
1827	1,508,425	1,258,921	continued.	
1828	1,541,041	1,277,986		
	32,580,515	28.868,085		

The total Import of Coal in twenty-eight years has been 32,580,515 Chaldrons; the Import in each year has occassionally been over or under the proper quantity; the amount, therefore, against each year, in the foregoing Table, has been an apportioned one, to ascertain, so nearly as possible, the consumption of Coal per head per annum. On the gross average, if 28,868,085 persons consume 32,580,515 chaldrons, each person consumes one chaldron and $\frac{12}{100}$ths.

XXIV.—LIVERPOOL DOCKS.

A Comparative Statement of Rates and Duties received in the year ending on the 24th June, 1828 and 1829.

	Years. 1828. £. s. d.	1829. £. s. d.	Increase. £. s. d.	Decrease. £. s. d.
Duties on Tonnage	62,969 7 10	66,128 18 10	3,159 11 0	—
Duties on Goods..... .	78,400 7 9	81,198 6 1	2,797 18 4	—
Lighthouse Duties.....	7,193 16 0	7,662 3 3	468 7 3	—
Floating Light Duties..	3,159 2 6	3,387 7 7	228 5 1	—
Graving Dock Duties ..	2,798 15 0	2,608 11 0	—	190 4 0
Graving Block Duties..	493 4 6	554 16 6	61 12 0	—
Extra Dock Rent.. ...	445 3 3	335 13 4	—	109 9 11
Total	155,459 16 10	161,875 16 7	6,415 19 9	—
No. of Vessels.....	10,703	11,383	680	—
Tonnage	1,311,111	1,387,957	76,846	—

ROBERT PICKERING, TREASURER.

Dock-Office, Liverpool, 24th June, 1829.

XXV. An ABSTRACT of the CUSTOMS' RETURNS at the Port of GOOLE, from the commencement of its Foreign Trade on the 5th of April, 1828, to the 5th of July, 1829, inclusive.

	1828. Midsummer Quarter.	1828. Michaelmas Quarter.	1828. Christmas Quarter.	1829. Lady-Day Quarter.	1829. Midsummer Quarter.
	£.	£.	£.	£.	£.
Import Duties	4,119	10,659	6,769	3,618	17,309
Coastwise ditto	55	88	. .	. .	144
Export ditto	165	296	237	307	600
Totals	4,339	11,043	7,006	3,925	18,053
Declared Value of Exports.					
Woollens	25,831	52,789	45,180	123,847	116,600
Cotton Manufactured	117,129	173,979	196,492	151,261	259,000
Cotton Twist				145,862	249,900
Totals	142,960	226,768	241,672	420,970	625,500
	lbs.	lbs.	lbs.	lbs.	lbs.
Sheep's Wool imported . . Nett	270,000	1,500,000	930,000	332,786	604,453
Foreign Vessels Inwards . .	26	34	29	12	48
Ditto Outwards . .	14	17	17	22	45
Totals	40	51	46	34	93
Coasters Inwards	154	198	247	190	216
Ditto Outwards	172	187	239	226	199
Totals	326	385	486	416	415
Grain Imported.	Quarters	Quartes	Quarters	Quarters	Quarters
Wheat	. .	480	5,379	1,773	26,486
Beans	3,259	770	. .	. .	503
Barley	. .	. .	98		
Oats	. .	. .	. .	. .	1,773
Total Quarters	3,259	1250	5,477	1,773	28,762

XXIII. CONSUMPTION OF COALS IN LONDON.

A STATEMENT of the adjusted Importation of COALS to London since 1801, and the probable Population in each year, for the sake of showing the consumption per head. The consumption in 1801 appears small, because the Import of 1800 was very large. (From Mr. Charles Perkins' Evidence before the Lords' Committee.)

	Chaldrons of Coals.	Population.		Chaldrons per Head.
1801	859,738	818,129	Census of 1801 .	1.05
1802	881,031	831,628	. . . .	1.06
1803	902,324	845,127	. . . .	1.07
1804	923,617	858,626	. . . .	1.07
1805	944,910	872,125	Presumed annual Rate	1.08
1806	966,203	885,624	of Increase about	1.09
1807	987,496	899,123	1.65 per cent	1.09
1808	1,008,789	912,622	. . . .	1.105
1809	1.030,082	926,121	. . . .	1.112
1810	1,051,375	939,620	. . . .	1.118
1811	1,072,668	953,276	Census of 1811 .	1.12
1812	1,093,959	972,184	. . . .	1.125
1813	1,115,252	991,249	. . . .	1.125
1814	1,136,546	1,010,314	. . . .	1.124
1815	1,117,034	1,029,379	Presumed annual Rate	1.08
1816	1,149,650	1,048,444	of Increase about	1.09
1817	1,182,266	1,067,509	2 per Cent.	1.107
1818	1,214,882	1,086,574	. . . .	1.118
1819	1,247,498	1,105,639	. . . .	1.127
1820	1,280,114	1,124,704	. . . .	1.18
1821	1,312,730	1,144,531	Census of 1821 .	1.146
1822	1,345,345	1,163,596	. . . .	1.156
1823	1,377,961	1,182,661		
1824	1,410,577	1,201,726	Presumed that the	
1825	1,443,193	1,220,791	same Rate of an-	
1826	1,475,809	1.239.856	nual Increase has	
1827	1,508,425	1,258,921	continued.	
1828	1,541,041	1,277,986		
	32,580,515	28.868,085		

The total Import of Coal in twenty-eight years has been 32,580,515 Chaldrons; the Import in each year has occassionally been over or under the proper quantity; the amount, therefore, against each year, in the foregoing Table, has been an apportioned one, to ascertain, so nearly as possible, the consumption of Coal per head per annum. On the gross average, if 28,868,085 persons consume 32,580,515 chaldrons, each person consumes one chaldron and $\frac{12}{100}$ths.

XXIV.—LIVERPOOL DOCKS.

A Comparative Statement of Rates and Duties received in the year ending on the 24th June, 1828 and 1829.

	Years. 1828.			1829.			Increase.			Decrease.		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
Duties on Tonnage	62,969	7	10	66,128	18	10	3,159	11	0	—		
Duties on Goods..... .	78,400	7	9	81,198	6	1	2,797	18	4	—		
Lighthouse Duties.....	7,193	16	0	7,662	3	3	468	7	3	—		
Floating Light Duties..	3,159	2	6	3,387	7	7	228	5	1	—		
Graving Dock Duties ..	2,798	15	0	2,608	11	0	—			190	4	0
Graving Block Duties..	493	4	6	554	16	6	61	12	0	—		
Extra Dock Rent.. ...	445	3	3	335	13	4	—			109	9	11
Total	155,459	16	10	161,875	16	7	6,415	19	9	—		
No. of Vessels.....	10,703			11,383			680			—		
Tonnage	1,311,111			1,387,957			76,846			—		

ROBERT PICKERING, TREASURER.

Dock-Office, Liverpool, 24th June, 1829.

XXV. An ABSTRACT of the CUSTOMS' RETURNS at the Port of GOOLE, from the commencement of its Foreign Trade on the 5th of April, 1828, to the 5th of July, 1829, inclusive.

	1828.			1829.	
	Midsummer Quarter.	Michaelmas Quarter.	Christmas Quarter.	Lady-Day Quarter.	Midsummer Quarter.
	£.	£.	£.	£.	£.
Import Duties	4,119	10,659	6,769	3,618	17,309
Coastwise ditto	55	88	. .	. .	144
Export ditto	165	296	237	307	600
Totals	4,339	11,043	7,006	3,925	18,053
Declared Value of Exports.					
Woollens	25,831	52,789	45,180	123,847	116,600
Cotton Manufactured	117,129	173,979	196,492	151,261	259,000
Cotton Twist				145,862	249,900
Totals	142,960	226,768	241,672	420,970	625,500
	lbs.	lbs.	lbs.	lbs.	lbs.
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Totals	326	385	486	416	415
Grain Imported.	Quarters	Quartes	Quarters	Quarters	Quarters
Wheat	. .	480	5,379	1,773	26,486
Beans	3,259	770	. .	. .	503
Barley	. .	. .	98		
Oats	. .	. .	. .	. .	1,773
Total Quarters	3,259	1250	5,477	1,773	28,762

XXVI. PATENTS FOR INVENTIONS.

A Select Committee of the House of Commons was last Session appointed to inquire into the present state of the law and practice relative to the granting of Patents for Inventions; but, after having been obliged, owing to the intricacy and importance of the subject, to examine witnesses on it at great length, they found themselves at the close of the Session only prepared to report the minutes of the evidence taken before them, together with several documents; at the same time earnestly recommending to the House that the inquiry should be resumed early in the next Session. The following is an abstract of what is most material in these minutes and documents, which were ordered by the House to be printed on the 12th of June last. The examination of witnesses by the Committee commenced on the 8th of May, and was continued during thirteen sittings, the last of which took place on the 12th of June. During this time nineteen witnesses were examined, whose evidence fills 156 pages folio, while the documents submitted by them occupy about 100 pages more.

It will be convenient, in the first place, to enumerate in their order the several steps in the process of taking out a patent, as we collect them from the evidence of different witnesses:—

1. A caveat may be entered at the Patent Office by the party about to apply for a patent, the effect of which will be to entitle him to have notice of any application that may chance to be made by another party for a patent in regard to an invention appearing to be similar to his, before his patent shall have been granted. The caveat costs fifteen shillings, and runs for six months. It may be lodged by any person who chooses, whether he means to take out a patent or not; and it will entitle him to a notice of all patents that may be applied for on the subject which it names.

2. An affidavit is made by the party applying, that he has either invented or has had communicated to him by a foreigner, some discovery, the general nature of which he describes at the same time by what is called its title.

3. A petition is presented to the King, through the office of the Secretary of State for the Home Department, praying a grant of Letters Patent for England, Wales, and Berwick-on-Tweed, either with or without the addition of the colonies, as the petitioner may think fit.

4. A reference is made by the Secretary of State, in the name of the King, to the Attorney or Solicitor-General, to report on the application.

5. If there happen to be any caveats on the books of the Patent Office from persons professing to be engaged with similar discoveries, notice is now given to them, and a delay of about a week takes place, in order to ascertain whether or no they intend to oppose the present application. If, by the end of that time, notice of an intention to oppose be given by any of them, the applicant's next step is to take out a summons for the hearing before the Attorney or Solicitor General.

6. A week's notice is then given to each party of the time appointed for the hearing, which, from various causes is, however, frequently much longer delayed; but, at last, on the parties both attending, the law officer before whom it takes place hears separately, first the applicant, and then his opponent; and, if he finds that the two claims are for different inventions, reports in favour of granting the patent.

7. That report must then be taken by the applicant to the Secretary of State's Office, to be laid before the King.

8. After some time the applicant receives the King's warrant, directing the Attorney-General to prepare the patent.

9. Having carried this warant to the Patent Bill Office, the party, generally in the course of about a week, receives his patent, with the signature of the Attorney or Solicitor General.

10. It is now called the King's Bill, and must be taken back to the Secretary of State's Office for his Majesty's signature.

11. The King having signed it, it next goes to the Signet Office, where it passes, and is then called the Signet Bill.

12. From this it goes to another office, where it receives the Privy Seal, after which it is called the Privy Seal Bill.

13. From the Privy Seal it goes to the Lord Chancellor's Office, and if a caveat be lodged, which, however, is now rarely done at this stage of the process, notice is given of it to the applicant.

14. He must now petition the Lord Chancellor to have the caveat removed, on which his opponent is called upon to support his opposition.

15. If the opposition be found not to rest on sufficient grounds, the patent receives the Great Seal, and is then completed. It used, formerly, to be taken after this to the Hanaper Office, but that form is now dispensed with, although the Hanaper fees are still exacted.

16. A certain time—generally not more than two months, but sometimes extending even to two years—is now allowed to the applicant to make out a specification of his invention; and it is only after he has lodged this specification that he is entitled to the benefit of his patent. The specification must be fairly comprehended under the title or general description already lodged.

The forms for taking out patents for Scotland and Ireland differ somewhat from those for England; but it is unnecessary to detail them at length. It generally takes from about six weeks to three months to obtain an English patent; a Scotch one may, in ordinary cases, be obtained in about half that time; while a patent for Ireland can seldom be had in less than five or six months. None of the witnesses profess to be able to account for the reason of the delay in this last case. The expense of taking out a patent for England amounts to about 107*l.*; for Scotland about 80*l.*; and for Ireland about 128*l.* It will be considerably greater, however, in each case, should any opposition be made. To these sums must also be added the expense of the specification, which is generally drawn up by a professional adviser, and costs more or less, according to its length. "I have had them," says Mr. Farey, the engineer, "as high as 200*l.* for one very intricate invention, where there were patents for all three kingdoms; and from that to as low as three guineas." The average charge he reckons as amounting to about 20*l.* Another witness, Mr. Moses Poole, one of the clerks in the Patent Office, mentions 360*l.* as about the whole expense of taking out patents for the three kingdoms, "if with a short specification, and no opposition." A third, Mr. Samuel Morton, who had been connected with his brother in taking out a patent for a slip invented by the latter for hauling ships out of the water, states that the three patents for England, Scotland, and Ireland, including agency, cost about 450*l.*

With a single exception, that of Mr. Poole, who declares that he does not see any defect in the present law, although he afterwards admits that it might be in various respects improved, the

witnesses examined by the Committee are unanimous in affirming that the existing condition of the law and practice with regard to the granting of patents is productive of considerable inconvenience.

There is much difference of opinion among the witnesses as to the cost at which a patent ought to be obtained, but it does not seem to be thought by any of them that the present expense is too small. The objection to a great reduction in the price of patents is, perhaps, most distinctly stated by Mr. Samuel Clegg, when he says, that if it were made very much lower than it is, he thinks "the Patent Office would be so loaded, that a person could hardly bend an iron in a particular shape without running the risk of infringing a patent." The opposite view is, however, advocated with particular force by Mr. John Isaac Hawkins, on the grounds that the great bulk of inventors are poor; that they find it exceedingly difficult, even when their discoveries are of value, to obtain the assistance of monied men; that under the present expensive system it is, in general, rather the bold and sanguine than the cautious and sober-minded who take out patents; that the author of a new invention has a right to be protected on the same grounds as the author of a book or a piece of statuary; and that whatever evils might at first arise from lowering the price of patents, they are of a nature gradually to correct themselves, and diminish. Several of the witnesses, who do not object to the expensiveness of patents on these grounds, contend that the tax is an unfair one, as falling with the same weight upon all inventions, however differing in profitableness. The present law is also objected to as granting the monopoly in all cases for the same period of fourteen years, which may be too long a term as a reward for some inventions, and too short to enable the patentees to derive any advantage from others. It is suggested by some of the witnesses, that a party applying for a patent should have it in his power to take it out, if he chooses, for a shorter term than that at present permitted by law; the cost being reduced proportionally, as is the case in France. An extension of the usual term has sometimes been obtained from Parliament, but with so much difficulty, that even a patentee who has a good claim to such an indulgence will generally consider it in vain to apply for it.

Among the other minor defects which are objected to the existing law, may be mentioned—its barring the taking out of a patent for an invention which has been derived from the communication of an Englishman residing abroad, although it protects the first introducer of an invention from another country, provided he swears he has had his information from a foreigner; its refusal to allow the assignees of an inventor, while he himself is alive, to take out a patent for his discovery; its prohibition against more than five individuals having an interest in the same patent; and its apparent want of any provision for the protection of patent rights in India.

The present law of patents is founded on the act 21 James I., cap. 3, commonly called the Statute of Monopolies; and strong complaints are made by several of the witnesses, and especially by Mr. Rotch, that, owing partly to its original deficiencies, and partly to the

change of circumstances which has taken place since it passed, this statute is, in several respects, altogether unsuited to modern times, and that to such a degree that the judges, in interpreting it, have of late found themselves compelled to depart, in some respects, from its literal meaning altogether, while as to other parts of it the greatest difference of sentiment prevails among them, and the decisions of one are diametrically opposed to those of another. Thus the statute allows the taking out of a patent only for the invention of a new *manufacture;* and Lord Mansfield, whose opinion several of the judges follow, has ruled accordingly that no article is patentable which is not vendible; but Lord Tenterden, in a celebrated judgment, "the King *v.* Wheeler," suggested that the import of the term *manufacture might, perhaps, extend* also to what we should now call a *process:* and he and others of his learned brethren now decide upon the principle of that interpretation. So again, the statute says, there shall be no patent granted, except to the true and first *inventor* of a manufacture; but the judges have in modern times decided that an *importer* also may take out a patent: thus holding that an importer is an inventor. This confusion and uncertainty are, of course, pregnant with inconvenience and hardship. Many of the witnesses declare that the price of a patent would, in general, be no consideration, if it could be made to afford any security after it was obtained.

The tediousness of the process for obtaining a patent is the subject of almost universal complaint. In America, it is stated, the forms are so simple that the business may be managed in a day, and seldom occupies more than a week. The necessity of twice obtaining the King's signature is mentioned as the principal cause of the delay that takes place in the case of patents for England, although those for Ireland, which do not require to be laid before his Majesty, are much longer detained on their way to the Great Seal. It is alleged, too, that unfair management is sometimes practised as to this matter.

But the injury arising to the party applying for a patent from the delay that takes place in granting it, amounts to something much more serious, it is argued, than a mere loss of time. By law a patent is entirely vitiated in case the invention shall in any way chance to be made public before the instrument shall have passed the Great Seal. The patent is vitiated, although such publication may have been merely accidental, or even although it may have been brought about by the treachery of those to whom the secret had been unavoidably disclosed in confidence—of the workmen, for instance, whose assistance had been employed in making the necessary experiments. The longer, therefore, the delay in question, the greater the danger of this result. And that danger is still further augmented by the circumstance, that owing to the notice given, as already explained, to all those who may have lodged caveats, of the application of the party about to take out the patent, the attention of a number of other parties, several of them probably hostile, is from that moment turned to his proceedings; and it sometimes happens that no means, even the most unfair, are left untried to

obtain possession of his secret. It will occasionally fall out, too, that by merely giving his thoughts for a short time to the study of an object or end which he is told another has already accomplished, one ingenious man shall, without resorting to anything fraudulent at all, arrive at another's discovery; and then, if he is so inclined, he may publish it, and at once defeat the patent. "A person," says Mr. Holdsworth, "was absolutely soliciting a patent; a friend of that person informed me of it, where a party were assembled in this city. I was surprised at what he stated, because it appeared to me almost next to impossible that the end stated to be sought for could be obtained. I told the party that I would endeavour to find it out, and that, if I did, I would come to them, and inform them of what I had done; and I came back on the day I had promised, and told the party that I had accomplished my object. The person who first mentioned it to me asked if I had any objection to allow a third person to be umpire between us; on condition that, if our ideas were the same, we might unite our forces, but that, if our ideas were different, each might still proceed. I agreed, but I did not meet the other man, but the third person, who was to be the umpire only; and when we had both stated to him our ideas, they were so perfectly unlike, though attaining the same object, that we both took out patents."* It is obvious that the first discoverer was here, by the mere accident of the object of his invention getting abroad, placed, to a certain extent, at the mercy of the second, who, if their methods had turned out to be the same, might, had he chosen, have, by publishing the secret, completely destroyed the other's patent, and who, as it was, became enabled to divide his profits.

To prevent this danger as much as possible, parties applying for patents have been wont, in the first instance, to describe their inventions by the most vague and obscure titles they can devise, that so it may be the more difficult for others to guess even their real object. But this practice leads, it is contended, to various inconveniences. First, it encourages persons to make applications for patents on account of inventions which are immatured, and may turn out merely imaginary when more deliberately considered. Secondly, it deprives the public of the notice of such new discoveries as patents may be about to be taken out for: thus leaving parties, on the one hand, to proceed in the pursuit of discoveries which have been already completed by others,—perhaps, even to take out patents for them at great expense, which after a few months they will find to be of no value; or, on the other, deterring them altogether from going on with their experiments, or lodging their claims till the applicant who they fear has anticipated them shall have completed his specification—a period always of many months, and sometimes of years, at the end of which it may nevertheless, very possibly, turn out that his invention has had nothing in common with theirs in respect either of method or object.

Thirdly, this facility of obtaining patents for alleged discoveries of the nature of which only the most general description is given,

* Minutes. Evidence of A. H. Holdsworth, Esq. M.P. p. 120.

puts it in the power of a dishonest patentee to select for the subject of his monopoly any other new discovery, however superior in value to his own, for which another person might lodge a specification before he may be required to complete his, and which he can contrive to comprehend under a title which, in contemplation of this chance, he designedly makes vague and accommodating. This inconvenience is stated to be greatly increased by the custom which prevails of granting different periods of time to different patentees for the completion of their specifications, in consequence of which it sometimes happens, that of two claimants of patents, under the same or very similar titles, the one who has both applied for his patent and obtained it before the other, shall still, by obtaining under some pretence a longer time for specifying, at last contrive to steal the other's invention; the advantage of which he is in this case, in general, enabled to secure to himself on the ground of his previous application for a patent, under a title in which this invention, however little in reality dreamed of by him at the time, may seem to be comprehended.

In order to obviate these inconveniences, it is suggested by many of the witnesses that, as in France and other countries, the patent should protect the invention, not merely from the date of its passing the Great Seal, but from that of the party's first application for it; and that, in that case, it should be made obligatory upon the applicant to embody his specification in his original petition or affidavit. The principal objection which is stated to this plan is, that it would be, in many cases, difficult for a discoverer to describe his invention fully until he has had an opportunity of making such experiments, as the secrecy that must be preserved before making his application would hardly allow him to attempt. But it is answered that, even under the present system, the principal experiments by which the efficacy of an invention is ascertained must be made during the time when publication would vitiate the patent—and that the whole amount of the hardship attendant upon the new plan would, in truth, be little more than to put an end to applications for incomplete, imaginary, or pretended discoveries, or in other words to what is, in almost all cases, either a trade of folly or of fraud. It is added, that the necessity of operating in secret before notice has been given of the intention to apply for a patent, (which, being obviously unavoidable, the proposed innovation would leave unremoved,) is not to be compared in point of inconvenience and risk with the obligation on the patentee of continuing to do so (as under the present system) after the attention of all his rivals has been called to his proceedings, by its being made known that he is about to take out a patent for his invention. In the former circumstances he may, in general, easily contrive to pursue his investigations almost without exciting a suspicion. The evidence of nearly all the witnesses examined by the Committee goes to show the extreme risk at which he proceeds in the latter, and how completely he is in almost every case obliged to place himself at the mercy even of his servants.

The incompetency of the tribunals before which questions regarding patents are at present decided, is complained of by almost all the witnesses. The hearing in the first instance, in case of any opposition to the passing of the instrument being raised, before the Attorney-General, is described as a mere farce; and common juries and judges are represented as, in general, equally unfit for the determination of the cases they are called upon to decide. The grounds, too, upon which patents are usually set aside by the courts are represented as a great grievance; those, on account of which the instrument is most apt to be found invalid, being either the alleged obscurity of the specification, although it may be obscure only to persons not conversant with the subject to which it refers; or its accidental mention of some part of the apparatus, however unimportant, as new, which can be proved to have been previously in use, although it is plainly impossible for any knowledge or caution always to avoid such mistakes; or its asserted want of agreement with the title of the patent. The expense of defending patents is in this way, it is stated, rendered exceedingly great, as well as their validity in every case uncertain; inasmuch as it is impossible for a patentee to know, before he is brought into court, in what manner his monopoly is to be attacked; whether by an objection to the legal or technical language of his specification, which he must therefore, at whatever cost, have a crowd of professional witnesses ready and competent to explain, or by an unknown individual from the most remote part of the country standing up and asserting that some portion of the process is to his knowledge not new; a sort of evidence which, in many cases, hardly any preparation can enable him to meet. The facility with which a patent may be defeated on this last ground is also asserted to be a fruitful source of perjury. Some of the witnesses complain, too, of the hardship to which a patentee is subjected in having to sustain repeated attacks upon his patent, even after he has obtained a verdict in favour of its validity, and that although no new objections may be advanced against it. As for the necessary agreement between the specification and the title, which must at the same time be made so far general and obscure, in order to prevent the invention from being pirated before the patent has passed, Mr. Farey says, "It is one of the most metaphysical problems that I know to prepare a title to a patent. It generally takes me two or three days to make up my mind about the wording of a title; not to be so clear as to call the attention of rivals, and enable them to discover the subject, and not so obscure as to incur the danger that a court of justice may afterwards rule that it is an imperfect definition or title of the invention described in the specification."

The remedy proposed for these evils by some of the witnesses, is the appointment of a commission of professional men to superintend the business of granting letters patent. But upon this head much difference of opinion is expressed. It is urged by many, as an objection to such a scheme, that it would be extremely difficult, or impracticable, to constitute the proposed tribunal in such a man-

ner as to make it perfectly competent for all its duties, and at the same time to secure to it the confidence of the public. Some, too, would have the commission to be a permanent body, while others contend that it should be, in every case, merely a jury empanelled, as it were, for the trial of the particular issue that has arisen. But the point as to which the greatest diversity of sentiment exists, is the extent of the powers with which the commission should be vested, and the duties it should be called upon to discharge; some holding, that in regard to patents it should take the place both of the Attorney-General and of the Courts of Law, deciding both upon the propriety of granting the patent in the first instance and upon the objections that may be made to its validity afterwards, whilst others would confine its functions to the former of these two departments. Several of the witnesses go so far as to propose that the Commissioners should even guarantee the sufficiency of the specification, by ascertaining, when it is first laid before them, that it is at least a true, full, and distinct description of the invention—and that even by the institution of experiments, if necessary. Mr. Charles Few being asked, if he thinks the commissioners should be invested with these powers, answers, "Certainly not; it could not be expected that the Commissioners would try, by actual experiment, every invention for which a patent was asked. For example, with regard to Sir Humphrey Davy's safety lamp, if a patent was taken out for an improvement in it, would the Commissioners trust to the petitioner's belief of its safety, and go down into a mine to see whether it did or did not answer? Neither could a Commissioner be expected to go down in a supposed improved diving-bell, or to go out in an improved life-boat in a storm, to ascertain if it answered the purpose intended. And safety-valves to air-balloons, upon a new principle, may be invented; are the Commissioners to make the experiment by ascending in the balloon? And so with respect to physic to be taken, and its operation to be attended to."

The convenience of the patentee, it is stated, might be consulted, by dispensing with the necessity of his personal attendance to acknowledge his specification, and allowing him to do so by his attorney. Objections are also made to the rule of the Courts, which demands the production, upon trials, of an official copy of the specification, which, at the same time, it is never permitted to the patentee to compare with the original document. The difficulty of obtaining access to the records of patents, which are distributed among three different offices, where they are mixed up with a variety of other papers, are not indexed, and can only be consulted at considerable expense, is much complained of. Some of the witnesses propose to increase the security of the patentee by making his patent unassailable on any ground after it has been in force for a certain number of years, or has had a certain number of verdicts in its favour; and by preventing it from being affected by proof that any part of the invention has been formerly known, unless it be also shewn that it has been in use within a certain recent period. Nearly all the witnesses agree in considering it unadvisable, that the detection of an accidental assumption by the patentee of some-

thing previously in use as his own invention, should have any other effect than merely to invalidate his claim to the monopoly of that particular.

The inequality of the different periods allowed for lodging specifications to patents, according as they may be for England, Scotland, or Ireland, is objected to, as permitting the invention to be pirated in one kingdom, from the specification that has been enrolled in another. The law, it is stated, would be greatly improved by its permitting the taking out of a single patent for all the three kingdoms. Another temptation to perjury would also be removed by abolishing the practice of granting longer time for lodging specifications to parties who make affidavit, after taking out a patent for England, that they mean to take patents out likewise for Scotland and Ireland, many of whom have no such intention.

It is stated as a great imperfection in the present law, that it does not permit the patentee to add any improvements to his invention after he has given in his specification, or even after he has first applied for his patent, unless he can make his new ideas appear to have been comprehended under his original title. The French law allows the specification to be modified by what may be called riders, on the payment of a small penalty by the patentee. It is considered as another imperfection of the English law, that it does not make it compulsory upon the patentee to make use of his patent after he has obtained it.

There is no regular publication of patents in England; and some of the witnesses propose that lists of them should appear in the *Gazette*. A few of the specifications are occasionally given in some of the periodical publications; but their accuracy, it is stated, is not always to be depended on. According to a paper delivered in by Mr. Wyatt, the Editor of the Repertory of Arts, the number of patents granted yearly, from 1675 to 1690, appears to have varied from 0 to 7, excepting the year 1684, when it amounted to twelve. During the three years immediately following 1690, it averaged twenty-one annually. It did not afterwards exceed nine till 1732, in which year thirteen patents were taken out, which number was rarely exceeded till 1766, when they amounted to thirty. In 1782, the number was only thirty-nine; but next year it was sixty-four. It varied between forty-three and eighty-four from that time till 1800, when it rose to ninety-six. In 1804, the number was sixty; in 1809, one hundred and two; in 1813, one hundred and forty-three; in 1825, two hundred and forty-nine; in 1826, one hundred and thirty-one: in 1827, one hundred and forty-eight; in 1828, one hundred and fifty-two; from January to May, 1829, thirty-seven. The total number of patents in force in May, 1829, was one thousand eight hundred and fifty-five. During the six years, from 1821 to 1826, inclusive, it is stated, in another paper delivered in by Mr. Hawkins, that the average number of patents granted was, in England, one hundred and fifty-two; in France, one hundred and eighty-two; and in Austria, one hundred and eighty-three.

XXVII. THE NEW POLICE ACT.

As the provisions of this act (see p. 182) are of considerable importance, and have been made the subject of much observation and some mis-statements, it may be worth while to point out in what particulars they introduce any material innovation in the system of police which has hitherto prevailed in the metropolis.

As far as regards the *powers* of the new police, they seem to be no greater than those already vested in similar officers either by the common or statute law.

Under the *4th section*, they receive such authority as constables possess either by virtue of acts of Parliament, or by the ancient law of the realm.

Under the 7th section additional powers might seem to be conferred: but on inspection of the various statutes for enforcing the duty of watch and ward, from the statute of Winton, in 13 Edward I., down to 52 George III., chap. 17, it appears that very similar provisions have been usually inserted in all. In the 14 George III., chap. 90, sec. 14, for regulating the Watch of the Metropolis; in the 7 George IV., chap. 142, sec. 73, for consolidating the Turnpike Trusts near London, and in various other acts of parliament for similar objects, the provisions defining the duties of watchmen are almost verbally the same as in the new act. In the 7 George IV., chap. 142, the powers are much greater than in the new act. Indeed it is very questionable whether the above clause confers any power not already possessed by a constable or watchman *ex officio* by the common law, although it would perhaps have been less open to exception if the class of offences intended by the words *evil designs* (notwithstanding the long legislative use of the expression) had been more distinctly pointed out.

The most important feature of the new act is the establishment of a police force, separate from the control of the local magistracy, and independent of the parochial authorities to whom the appointment and regulation of the nightly watch have been hitherto intrusted. Henceforward the prevention and detection of offences within the districts included in the act will chiefly devolve on the newly-appointed "Commissioners of Police," whose functions are to be exclusively confined to the attainment of these objects; while the examination of persons charged with offences will continue to be exercised by the magistrates of the metropolitan offices as before. Agreeably to this arrangement, the last act for continuing the authority of these offices (10 Geo. IV., chap. 45) provides, that the horse and foot patrol acting under the orders of the chief magistrate of the Bow-street office shall henceforth be put under the orders of the justices of the New Police.

An abstract of the instructions promulgated by the commissioners under the authority of the 5th section is inserted here, as it is evidently desirable that the public, as well as the police, should be acquainted with their general purport.

ABSTRACT OF THE NEW POLICE INSTRUCTIONS.

The object to be attained is the prevention of crime. The absence of crime will be considered the best proof of the efficiency of the Police.

The Metropolitan Police District is at present formed into five divisions. The number of men in each is the same; but their distribution is guided by local circumstances. Each division, marked by a name and number, is divided into eight sections, and each section into eight beats. The Police force is divided into as many companies as there are divisions, and each company consists of 1 superintendent, 4 inspectors, 16 serjeants, and 144 police constables. The company is divided into 16 parties, each consisting of 1 serjeant and 9 men. Four serjeants' parties form an inspector's party; the whole company is under the command of the superintendent.

Every man admitted into the police force is to devote his whole time to the service; to serve and reside wherever he is appointed; to obey all lawful orders and conform to all regulations; not to take money from any person without express consent of the commissioners; at all times to appear in his complete police dress; and to pay all debts contracted by him, as the commissioners shall direct.

One half of the entire force will be on duty at night, and these will be relieved by the other half. The men who are off duty are to consider themselves liable to be called upon at all times. The serjeants call over and direct their respective parties, and report to the inspector. One inspector takes the general charge of the duty throughout the division, visiting the men; the other remains in the division station. The inspectors deliver a written report to the superintendent; who reports to the office, and sends all persons given in charge during the night to the offices of the police magistrates.

The *superintendent* is responsible for the general performance of the duties of the police within his division. He is to observe the conduct of all loose, disorderly, and suspected persons within it, to whom he is to make it evident that they are known and watched. Upon any alarm of fire, he is to repair immediately to the spot, and take the entire control of the police force. He is to give notice to fire offices, procure engines, preserve a free scope for the firemen's exertions, render every assistance to the removal of property, having it conveyed, if desired, to the nearest police station. He is also to collect all the information he can on the spot as to the cause of the fire, and direct special attention to thieves and pickpockets.

The *inspector* is responsible for the conduct of the serjeants and 36 men under him. The inspector on duty at the division station is to receive all charges, entering them in a book according to a printed form. He is to enter all property brought to him, and mark the articles the instant they are received, locking them up in a place kept for that purpose: he will take care that all persons brought under charges are securely confined; if the offence with which they are charged be only a petty misdemeanour, he may set them at liberty, taking a recognizance for their appearing next day at the sitting magistrates' office. In case application is made to him for assistance, he will, according to the best of his judgment, render all in his power, either from the reserve party, or by calling up those off duty; but this last is only to be done in cases of necessity.

The *serjeant* is responsible for the conduct of the 9 men under him. He is constantly to patrol his section to enforce the performance of duty by his men. He always at night carries a dark lantern. In case of any felony of disturbance, he will send for such assistance as may be necessar He will

give all assistance in his power to persons applying to him. In case of fire, in the absence of the superintendent and inspector, he will act according to the instructions given for their guidance. He must notice hackney-coaches and other carriages at night, which appear under suspicious circumstances. He is to be civil and attentive to every body, and to render every information and assistance in his power when required.

The *police constable* will be held responsible for the security of life and property within his beat, and for the preservation of peace and general good order during the time he is on duty. He should make himself perfectly acquainted with all the parts of his beat or section, with the streets, thoroughfares, courts, and houses. He will be expected to possess such a knowledge of the inhabitants of each house, as will enable him to recognize their persons, so as to prevent mistakes, and to enable him to render assistance to the inhabitants when called for. He will be able to see every part of his beat, at least once in ten minutes or a quarter of an hour; and this he will be expected to do; so that any person requiring assistance, by remaining in the same spot for that length of time, must certainly meet a constable. This regularity of moving through his beat shall not, however, prevent his remaining at any particular place, if his presence there be necessary to observe the conduct of any suspected person, or for any other good reason that shall be satisfactory to his superior. All his duty will be carried on in silence: he is not to call the hour. When he takes any one into custody, he will immediately repair to a spot in the section, appointed for the purpose, and remain there with the prisoner until some constable comes who can supply his place.

He shall not enter any house except in the execution of his duty; he will pay a particular attention to all public-houses in his beat. On no pretence shall he enter any public-house except in the immediate execution of his duty; the publican is subject to a severe fine for allowing him to remain in his house. No liquor of any sort shall be taken from a publican without paying for it at the time. If at any time he requires immediate assistance, and cannot in any other way obtain it, he must spring his rattle, but this is to be done as seldom as possible.

He will be civil and attentive to all people, of every rank and class, and be ready to give information and assistance when required; but he must not enter into conversation while on duty with any one, except on matters relating to his duty.

He must be particularly cautious not to interfere idly or unnecessarily; when required to act, he will do so with decision and boldness; on all occasions he may expect to receive the fullest support in the proper exercise of his authority. He must remember that there is no qualification so indispensable to a police-officer as a perfect command of temper, never suffering himself to be moved in the slightest degree by any language or threats that may be used; if he do his duty in a quiet and determined manner, such conduct will probably induce well-disposed by-standers to assist him, if he requires them.

The commissioners may recommend him to the Secretary of State for a reward, in case of extraordinary exertions; but on no pretence is he to receive a gratuity from any person for anything relating to his duty, on pain of immediate dismissal.

In the instructions of the New Police it is particularly required that every member of the force should make himself perfectly acquainted with such parts of the Law as relate to the *Office of a Constable*;—an abstract of his legal duties is, therefore, added to the instructions, which, as it may be of general utility, is here

printed without abridgment. It should be noticed, however, that some of the directions are drawn from local Acts, applicable only to the metropolis or its vicinity. The paragraphs containing these are included in brackets.

DUTIES OF A CONSTABLE.

It is intended here to state such parts of the law relating to the office of a constable as may be sufficient for the general instruction of the police force.

Each individual will bear in mind the extreme importance of making himself perfectly acquainted with this subject: it is necessary to enable him, with a due regard to his own safety, to act efficiently for the protection of the public.

At the commencement of a new establishment, it is the more necessary to take particular care that the constables of the police do not form false notions of their duties and powers.

The powers of a constable, as will appear hereafter, are, when properly understood and duly executed, amply sufficient for their purpose. He is regarded as the legitimate peace-officer of his district; and both by the common law and many acts of Parliament, he is invested with considerable powers, and has imposed on him the discharge of many important duties.

He is, in many cases, authorised and required, in the execution of his office, to arrest a party, charged with or suspected to be guilty of some offence; to enter a house, in pursuit of an offender—to quiet an affray—to search for stolen goods—to take possession of goods suspected of having been stolen.

It therefore becomes necessary that the constable should inform himself in what cases he ought so to interfere; and what legal powers he possesses to effect the object in case he meets with resistance. To assist the police constables in the discharge of their duties, the following observations are prepared for their attentive perusal.

We shall begin by showing him for what offences of more ordinary occurrence a party may be arrested and taken into custody. With this object offences may be divided into—

FELONIES AND MISDEMEANOURS.

Murder, house-breaking, robbery, stealing, picking pockets, receiving stolen goods knowing them to have been stolen, assaulting any one with intent to rob, setting fire to any church, house, or other buildings, are some of the principal felonies, besides a great many more too numerous to be inserted here.

Persons guilty of any of these offences are called felons.

Smaller offences, such as common assaults, affrays, and riots, are called misdemeanours.

As it is more important to prevent and punish the commission of great crimes, than of the lesser offences, the constable has a greater power in cases of felonies than in those of mere misdemeanours.

But the first duty of a constable is always to prevent the commission of a crime.

We shall therefore now show him what power he has to arrest a party, whom, from his situation and character, the law judges to be likely to commit some felony.

The constable may arrest one whom he has just cause to suspect to be about to commit a felony. Thus when a drunken person, or a man in a violent passion, threatens the life of another, the constable should interfere and arrest.

He should arrest any person having in his possession any picklock-key, crow, jack, bit, or other implement, with intent feloniously to break into any dwelling-house, warehouse, coach-house, stable, or out-building, or any person armed with any gun, pistol, hanger, cutlass, bludgeon, or offensive weapon, or having upon him any instrument, with intent to commit any felonious act.

Every person found in any dwelling-house, warehouse, coach-house, out-house, or stable, or in any enclosed yard, garden, or area, and being there for any unlawful purpose, may be arrested.

In each of these cases the constable must judge from the situation and behaviour of the party what his intention is. In some cases no doubt can exist, as when the party is a notorious thief, or acting with those who are thieves, or when the party is seen to try people's pockets in a crowd, or to attempt to break into a house, or to endeavour to carry off any property secretly from another. The constable will not act hastily, in case the intention is not clear, but content himself with watching closely the suspected party, that he may discover his design.

The constable must arrest any one whom he sees in the act of committing a felony; or any one whom another positively charges with having committed a felony; or whom another suspects of having committed a felony, if the suspicion appear to the constable to be well founded, and provided the person so suspecting go with the constable.

Though no charge be made, yet if the constable suspect a person to have committed a felony, he should arrest him; and if he have reasonable grounds for his suspicion, he will be justified, even though it should afterwards appear that no felony was in fact committed. But the constable must be cautious in thus acting upon his own suspicions.

Generally, if the arrest was made discreetly and fairly, in pursuit of an offender, and not from any private malice or ill-will, the constable need not doubt that the law will protect him.

If, after sunset and before sun-rising, the constable shall see any one carrying a bundle, or goods, which he suspects were stolen, he should stop and examine the person, and may detain him; but here also he should judge from circumstances, (such as the appearance and manner of the party, his account of himself, and the like,) whether he has really got stolen goods, before he actually takes him into custody.

The constable must make every exertion to effect the arrest, and the law gives him abundant power for the purpose. If the felon or party accused of felony fly, he may be immediately followed wherever he goes; and if he take refuge in a house, the constable may break open the doors, if necessary, to get in, first stating who he is, and his business. But the breaking open outer doors is so dangerous a proceeding, that the constable never should resort to it except in extreme cases, and when an immediate arrest is necessary.

There are some cases, in which a constable may and ought to break into a house, although no felony has been committed, when the necessity of the case will not admit of delay, as when persons are fighting furiously in a house, or when a house has been entered by others with a felonious intent, and a felony will probably be committed unless the constable interfere, and there is no other means of entering. Except in such cases, it is better, in general, that the constable should wait, till he has a warrant from a magistrate for the purpose.

If a constable finds his exertions insufficient to effect the arrest, he ought to require all persons present to assist him, and they are bound to do so.

If a prisoner should escape, he may be retaken; and, on immediate pursuit, the constable may follow him into any place or any house.

In cases of actual breaches of the peace, as riots, affrays, assaults, and the like, committed within the view of the constable, he should immediately interfere (first giving public notice of his office, if he be not already known), separate the combatants, and prevent others from joining in the affray. If the riot, &c. be of a serious nature, or if the offenders do not immediately desist, he should take them into custody, securing also the principal instigators of the tumult, and do everything in his power to restore quiet.

He may arrest any one assaulting or opposing him in the execution of his duty.

If a person forcibly enter the house of another, the constable may, at the request of the owner, turn him out directly. If he have entered peaceably, and the owner request the constable to turn him out, the constable should first request him to go out, and unless he do so, he should turn him out: in either case using no more force than is necessary for that purpose.

When the offence has not yet been committed, but when a breach of the peace is likely to take place, as when persons are openly preparing to fight, the constable should take the parties concerned into custody. If they fly into a house, or are making preparations to fight within the house, the constable should enter the house to prevent them, and likewise take the parties into custody; and should the doors be closed, he may break them open, if admission is refused, after giving notice of his office, and his object in entering.

If any party threaten another with immediate personal violence, or offer to strike, the constable should interfere, and prevent a breach of the peace; if one draw a weapon upon another, attempting to strike, the constable should take him into custody. If persons are merely quarrelling or insulting each other, the constable has no right to take them into custody, but should be ready to prevent a breach of the peace.

The constable ought to arrest and take before a justice any person walking about the streets and exposing to view in the street any obscene print or exhibition; or any person wilfully, openly, and obscenely in any street or place of public resort exposing his person, with intent to insult any female.

The constable cannot, in cases of misdemeanour, arrest a party after the matter has happened, upon the charge of another; though if another deliver to him a person whom he charges with having committed such a breach of the peace, the constable is bound to take charge of him.

If a party, charged with a misdemeanour, escape out of custody, he may be pursued immediately any where; and if he take refuge in a house, the doors may be broken open after demand of admission, and after notification by the constable of his office and object in coming.

After the arrest the constable is in all cases to treat a prisoner properly, and impose only such constraint upon him as may be necessary for his safe custody.

It is always desirable to take the prisoner as soon as convenient before the sitting magistrate, who will dispose of the case. At night he is to be taken to the division station, or, in cases of necessity, to the nearest place of safety.

The constable is bound to follow the directions contained in a warrant, and to execute it with secrecy and despatch; the power given to him for the purpose of arresting has been already shewn. If the warrant cannot be executed immediately, it should be executed as soon as possible afterwards.

The constable must execute the warrant himself, or when he calls in assistance must be actually present. Upon all occasions he ought to state his authority if it be not generally known, and should show his warrant when required to do so; but he should never part with the possession of the warrant, as it may be wanted afterwards for his own justification.

Upon the arrest being made, the prisoner is to be taken before the magistrate as soon as convenient. When the prisoner is brought to the justice, he still remains in custody of the constable until his discharge or committal, or until he receive the orders of the justice.

The constable may enter a house to search for stolen goods, having got a search warrant from a magistrate for that purpose. He should, when it is possible so to do, execute it in the day-time. If he finds the goods mentioned,

he is to take them to a magistrate, and, when the warrant so directs, he must take the person also in whose possession they are found: to avoid mistakes, the owner ought to attend at the search to identify the goods.

The constable has power to apprehend and carry before a justice of the peace, every common prostitute wandering in the public streets or public highways, or in any place of public resort, and behaving in a riotous or indecent manner.—Every person wandering abroad or placing himself, or herself, in any public street or highway, court, or passage, to beg or gather alms, or causing, or procuring, or encouraging any child so to do, all such being declared by the law to be idle and disorderly persons.

Every person wandering abroad and lodging in any barn or outhouse, or in any deserted or unoccupied building, or in the open air, or under a tent or in any cart or waggon, not having any visible means of subsistence, and not giving a good account of himself or herself.—Every person wandering abroad and endeavouring, by the exposure of wounds or deformities, to obtain or gather alms.—Every person going about as a gatherer or collector of alms, or endeavouring to procure charitable contributions of any nature or kind, under any false or fraudulent pretence.—Every person playing or betting, in any street, road, highway, or other open or public place, at or with any table or instrument of gaming, at any game or pretended game of chance.

In the cases just mentioned, the constable has, by law, power to arrest. Special directions will be given for his guidance by his officers, in the foregoing and in similar cases.

[If any carter, drayman, carman, waggoner, or other driver, shall ride upon his cart, dray, car, or waggon, in London, or within ten miles thereof, not having some other person on foot, to guide the same, he may be stopped, apprehended, and carried before a magistrate as soon as may be convenient.] If the driver of any carriage shall, by negligence or wilful misbehaviour, interrupt the free passage of his Majesty's subjects, he may be apprehended and conveyed before a justice. Also, if the coachman, guard, or other person having the care of any coach, or other carriage, shall by intoxication, or wanton or furious driving, or any other wilful misconduct on the public highway, injure or endanger any person, he may be apprehended.

[It is lawful for any man belonging to the police force, during the time of his being on duty, to apprehend all loose, idle, and disorderly persons, whom he shall find disturbing the public peace, or whom he shall have just cause to suspect of any evil designs, and all persons whom he shall find, between sunset and the hour of eight o'clock in the forenoon, lying in any highway, yard, or other place, or loitering therein, and not giving a satisfactory account of themselves, and to deliver any person so apprehended into the custody of the constable appointed under this act who shall be in attendance at the nearest watchhouse, in order that such person may be secured until he can be brought before a justice of the peace, to be dealt with according to law; or may give bail for his appearance before a justice of the peace, if the constable shall deem it prudent to take bail.]

[No shop, room, or place for the sale of ready-made coffee, tea, or other liquors, shall be kept open after 11 o'clock at night, during any part of the year; nor opened before four in the morning between Lady-day and Michaelmas, or before six in the morning between Michaelmas and Lady-day.]

[If any such are open, or, being shut, if any person during the said hours shall be found therein, except the persons dwelling there, or having lawful excuse for being there, master, mistress, waiter, or other person having care or management of such shop, &c., the constable should make complaint, next day, to the sitting magistrate.]

[Any one blowing any horn, or using any noisy instrument in the streets,

for the purpose of hawking, selling, or distributing any articles whatsoever, may be apprehended.]

The following cases are cases of nuisance; in which it is desirable that the constable should only ascertain the party offending, and take the means of finding him afterwards, and report the case to the superior officer, when directions will be given him for his further guidance.

[If any person in any public street or place beats or dusts carpets, or drives any carriage for the purpose of breaking, exercising or trying horses; or shall ride any horse for the purpose of trying or showing it for sale, in such a manner as to cause danger, or great annoyance to passengers; or throws any ashes, dirt, rubbish, dung, or any filth upon the carriage or footway; or shall slaughter or cut up any beast, swine, or sheep, so near any public street that any blood or filth shall flow upon the pavement; or rolls or drives upon the footway of any street any waggon, cart, or other carriage, or wheel a wheel-barrow or truck, or any cask or barrel, or rides or drives any horse or other beast upon any of the footways; the constable may apprehend the party and take him before a magistrate; but if he know the party, or can discover his residence, it will be better that the constable should lodge his complaint with a magistrate, who will then issue a summons for the party to appear.]

[If any person slack or sift lime in the streets, unless he can show the consent of the Commissioners of the Pavements for so doing, complaint may be made to a magistrate.]

[If entrances to coal-holes and cellars are not properly secured, so as to prevent danger to passengers, complaint should likewise be made.]

[If any scavenger or any person sweeps or places the mud, dirt, or rubbish, in any of the drains or sewers, complaint may be made in the same way.]

[During or after a fall of snow, or any frost, if the occupier of any house or building do not once in every day, except Sunday, before the hour of ten o'clock in the forenoon, sweep and cleanse the foot-way along the front or sides of their premises, complaint is to be made.]

[Any person carrying in any cart through the street soap lees, night soil, slop, or filth, without having a proper covering to prevent the same from spilling into the streets, or driving any cart with such soap lees, &c., through the streets at any time between the hours of six o'clock in the morning and eight in the evening, may be taken into custody at the time, or they may be summoned afterwards before a magistrate.]

[If any person empty any bog-house, or take away any night soil from any house in the streets, except between the hours of twelve o'clock in the night and five in the morning, from Lady-day to Michaelmas, or before six o'clock from Michaelmas to Lady-day, or if any person shall put any night-soil in or near any of the public streets, the constable should apprehend them immediately, and keep them in confinement till they can be conveniently carried before a magistrate, and may take their horses, carts, &c., to some place of security, to be kept till the decision of the matter.]

END OF THE SECOND PART.

CHARITABLE INSTITUTIONS,

IN AND NEAR LONDON,

SUPPORTED WHOLLY OR IN PART BY VOLUNTARY CONTRIBUTIONS

Classed according to their Objects.

"The liberal deviseth liberal things; and by liberal things shall he stand."—*Isaiah*, xxxii. 8.

I. MEDICAL AND SURGICAL RELIEF.

1. General Hospitals and Infirmaries.
2. Hospitals, Infirmaries, and Institutions for particular Complaints.
3. Lying-in Hospitals, Infirmaries, and Charities.
4. Dispensaries.

II. PECUNIARY RELIEF.

1. District and other Visiting Societies.
2. General and Particular Benefit, Pension, and Annuity Societies.
3. Professional and other Associations, for relief of distressed Members.
4. Societies for General Relief.

III. CORRECTIONAL AND PENITENTIARY INSTITUTIONS.

IV. MISCELLANEOUS BENEVOLENT INSTITUTIONS, FOR PROMOTING GENERAL AND PARTICULAR OBJECTS OF HUMANITY.

V. RELIGIOUS IMPROVEMENT.

1. Distribution of Bibles and Tracts.
2. General Religious Objects.
3. Missionary Societies.

VI. EDUCATION.

1. General Education of the Poor.
2. Provincial, District, and Parochial Schools.
3. Sunday-Schools and Religious Instruction.

I. MEDICAL AND SURGICAL RELIEF.

1. GENERAL HOSPITALS AND INFIRMARIES.

Name and Object.	Situation, and Date of Establishment.	Treasurer and Secretary.
St. Bartholomew's Hospital.	West Smithfield. 1102. Incorp. 1546.	Sir J. Shaw, Pres. J. Helps, Esq. Treas.
St. Thomas's Hospital.	Southwark. 1553.	C. Smith, Esq. Pres. Abel Chapman, Esq. T.
Guy's Hospital.	Southwark. 1721.	S. Thornton, Esq. Pr. B. Harrison, Esq. Tr.
London Hospital.	Whitechapel-road. Founded 1740. Incorporated 1759.	Q. Harris, Esq. Treas. Mr. John Jones, Sec.
Middlesex Hospital; for sick and lame Patients, Lying-in Women, & persons afflicted with Cancer.	Charles-st., Mary-lebone. 1747.	John Rawlinson, and C. R. Barker, Esqrs., Treasurers. Mr. A. Shedden, Sec.
St. George's Hospital.	Hyde-park Corner. 1785.	A. Holland, Esq., Trea. J. Gunning, Esq., Sec.
Westminster Hospital.	James-st., Buckingham-gate. 1719.	Hon. P. B. Bouverie, T. Mr. J. S. Crocker, Sec.
Hospital of Surgery.	Panton-square, St. James's, 1827.	J. Wardrop, Esq. Surgeon.
Royal Sea-bathing Infirmary, for the Poor of London.	Margate. 1796.	Mic. Gibbs. Esq. Trea Mr. Jos. Rainbow, Sec

Name and Object.	Situation, and Date of Establishment.	Treasurer and Secretary.
Royal Metropolitan Infirmary for Sick Children.	11, Broad-street, Golden-sq. 1820.	E. Harris, Esq., Trea. Mr. J. Day, Sec.
Royal Universal Infirmary for Children.	Waterloo Bridge-road. 1816.	E. Carter, Esq. Sec.
Seamen's Hospital;—Ship Grampus, Thames.	Office, 19, Bishopsgate-st. Within. 1821.	J. Labouchere, Esq. Treas. Rich. Harley, Sec.
Hôpital Français, for Poor French Protestants & their descendants, residing in Great Britain.	St. Luke's Old-st. 1716.	J. L. André, Esq. Trea. G. Guillonneau, Sec.
Royal West-London Infirmary, and Charing-cross Hospital.	28, Villiers-street, Charing-cross. 1818.	Rev. Dr. Richards, Tr. John Robertson, Hon. Sec.
Asylum for Recovery of Health, for the reception of persons in narrow circumstances, who, by paying a small weekly sum, are provided with accommodations superior to those which they can obtain either at their own houses or at public hospitals.	12, Lisson-grove, St. Marylebone. 1820.	H. Holland, Esq. and W. W. Pepys, Esq., Treasurers. Alex. Bruce, Resident Surgeon. J.P. Beavan, Esq., Sec.
Jews' Hospital for the Support of the Aged, and Employment and Education of Youth.	Mile End-road. 1797.	J. L. Goldsmid, Esq. Pres. L. Salomons, Sec.

2. Hospitals, Infirmaries, and Institutions for particular Complaints.

Bethlehem Hospital.	Lambeth. 1546.	R. Clark, Esq., Treas.
St. Luke's Hospital, for Lunatics.	Old street Road. 1732.	J. C. Powell, Esq., Tre. Tho. Webster, Sec.
Hospital for casual Smallpox, and for Vaccination.	Pancras-road, Gray's Inn-lane. 1746.	I. Solly, Esq., Treas. Jas. Clift, Sec.
London Fever Hospital.	Pancras-road, Gray's-inn-lane.	Ed. Forster, Esq., and J. L. Mallett, Esq., Treasurers. C. Murray, Sec.
Lock Hospital, for the Cure of Venereal Complaints.	Grosvenor-place, Hyde-park Corner. 1746.	C. Hoare, Esq. and T. Babington, Esq. Trs. Ben. Meredith, Sec.
Asylum for the Deaf and Dumb Children of the Poor.	Kent-road. 1792.	W. Nottidge, Esq., Tr. Chas. Compton, Sec.
London General Institution, for the gratuitous Cure of Malignant Diseases.	Greville-street, Hatton-garden.	G. Goddard, Hon. Sec.
Institution for the Cure and Relief of Glandular and Cancerous Diseases.	49, Nelson-square. 1820.	Sampson Hanbury, Esq., Treasurer.
Royal Westminster Infirmary and Ophthalmic Hospital.	Warwick-street, Golden-square.	S. Reed, Esq., Treas. W. T. Hughes, Sec.

Name and Object.	Situation, and Date of Establishment.	Treasurer and Secretary.
Royal Infirmary for Diseases of the Eye.	Cork-st., Burlington-gardens. 1804.	R. Mitford, Esq., Treas. H. Alexander, Esq. Sec.
Institution for the gratuitous Cure of Cataract.	12, Windmill-street, Tottenham-ct.-rd.	
London Ophthalmic Infirmary.	Moorfields. 1805.	William Mellish, Esq. President. J. Labouchere, Esq. Tr.
Kent and Surrey General Eye Infirmary.	7, Dean-street, Southwark.	E. Complin, Sec.
Surrey and Southwark Infirmary, for curing Diseases of the Eye and Ear.	1828.	J. H. Holmes, Esq. Tr. H. Richardson, Esq. Sec.
Royal Westminster Infirmary, for Diseases of the Eye.	7, Marylebone-st., Piccadilly.	J. Courteney, Sec.
Royal Dispensary, for Diseases of the Ear.	10, Dean-st., Soho. 1816.	W. Cobbe, Esq. Treas. Geo. Whiting, Sec.
City of London Truss Society, for the relief of the Ruptured Poor throughout the Kingdom.	76, Queen-street, Cheapside. 1807.	S. Cartwright, Esq., Treasurer. Thos. Eglinton, Sec.
Rupture Society.	Golden-square. 1805.	H. Hoare, Esq. Treas. J. Poynder, Esq. Sec.
Southwark Surrey Truss Society.	217, High-street, Southwark. 1796.	J. C. Smith, Esq. Tr. R. C. Smith, Esq. Sec.
Daranian Society.	48, Berners-street, Oxford-street.	W. Toulmin, Sec.
Royal London and Westminster Infirmary, for the treatment of Cutaneous Diseases.	24, Gt. Marlborough street. 1819.	Jas. Hodgson, Sec.
Asylum for the cure of Scrofula and Cancer.	13, Terrace, Bayswater. 1822.	Jas. Millar, Sec.
Infirmary for Asthma, Consumption, and other Diseases of the Lungs.	Union-street, Bishopsgate.	W. Ellis. Esq., Treas. S. Amory, Esq., Sec.
National Vaccine Establishment.	13, Percy-street.	Dr. Turner, Treas. Dr. Hue, Sec.
Vaccine Pock Institution.	Broad-street, Golden-square. 1799.	
London Vaccine Institution.	Union-court, Holborn.	Dr. Walker, Director.
Royal Jennerian Society.	32, Burr-street, Tower-hill.	Sir C. Price, Bart. Tr. John Fox, Sec.

3. Lying-in Hospitals, Infirmaries, and Charities.

Queen Charlotte's Lying-in Hospital.	Manor-house, Lisson-grove. 1752.	Jno. Wright, Esq. Tr. A. C. Thiselton, Sec.
City of London Lying-in Hospital, for the reception and delivery of Poor Pregnant Married Women.	City-road. 1750.	John Capel, Esq. M.P. Treasurer. Jas. Clift, Sec.
British Lying-in Hospital, for Married Women.	Brownlow-st., Long-Acre. 1749.	Mess. Hoares, Fleet-st. Yewd and Truwhitt, Secretaries.

Name and Object.	Situation, and Date of Establishment.	Treasurer and Secretary.
Royal Metropolitan Infirmary for Sick Children.	11, Broad-street, Golden-sq. 1820.	E. Harris, Esq., Trea. Mr. J. Day, Sec.
Royal Universal Infirmary for Children.	Waterloo Bridge-road. 1816.	E. Carter, Esq. Sec.
Seamen's Hospital;—Ship Grampus, Thames.	Office, 19, Bishopsgate-st. Within. 1821.	J. Labouchere, Esq. Treas. Rich. Harley, Sec.
Hôpital Français, for Poor French Protestants & their descendants, residing in Great Britain.	St. Luke's Old-st. 1716.	J. L. André, Esq. Trea. G. Guillonneau, Sec.
Royal West-London Infirmary, and Charing-cross Hospital.	28, Villiers-street, Charing-cross. 1818.	Rev. Dr. Richards, Tr. John Robertson, Hon. Sec.
Asylum for Recovery of Health, for the reception of persons in narrow circumstances, who, by paying a small weekly sum, are provided with accommodations superior to those which they can obtain either at their own houses or at public hospitals.	12, Lisson-grove, St. Marylebone. 1820.	H. Holland, Esq. and W. W. Pepys, Esq., Treasurers. Alex. Bruce, Resident Surgeon. J.P. Beavan, Esq., Sec.
Jews' Hospital for the Support of the Aged, and Employment and Education of Youth.	Mile End-road. 1797.	J. L. Goldsmid, Esq. Pres. L. Salomons, Sec.

2. Hospitals, Infirmaries, and Institutions for particular Complaints.

Bethlehem Hospital.	Lambeth. 1546.	R. Clark, Esq., Treas.
St. Luke's Hospital, for Lunatics.	Old street Road. 1732.	J. C. Powell, Esq., Tre. Tho. Webster, Sec.
Hospital for casual Smallpox, and for Vaccination.	Pancras-road, Gray's Inn-lane. 1746.	I. Solly, Esq., Treas. Jas. Clift, Sec.
London Fever Hospital.	Pancras-road, Gray's-inn-lane.	Ed. Forster, Esq., and J. L. Mallett, Esq., Treasurers. C. Murray, Sec.
Lock Hospital, for the Cure of Venereal Complaints.	Grosvenor-place, Hyde-park Corner. 1746.	C. Hoare, Esq. and T. Babington, Esq. Trs. Ben. Meredith, Sec.
Asylum for the Deaf and Dumb Children of the Poor.	Kent-road. 1792.	W. Nottidge, Esq., Tr. Chas. Compton, Sec.
London General Institution, for the gratuitous Cure of Malignant Diseases.	Greville-street, Hatton-garden.	G. Goddard, Hon. Sec.
Institution for the Cure and Relief of Glandular and Cancerous Diseases.	49, Nelson-square. 1820.	Sampson Hanbury, Esq., Treasurer.
Royal Westminster Infirmary and Ophthalmic Hospital.	Warwick-street, Golden-square.	S. Reed, Esq., Treas. W. T. Hughes, Sec.

Name and Object.	Situation, and Date of Establishment.	Treasurer and Secretary.
Royal Infirmary for Diseases of the Eye.	Cork-st., Burlington-gardens. 1804.	R. Mitford, Esq., Treas. H. Alexander, Esq. Sec.
Institution for the gratuitous Cure of Cataract.	12, Windmill-street, Tottenham-ct.-rd.	
London Ophthalmic Infirmary.	Moorfields. 1805.	William Mellish, Esq. President. J. Labouchere, Esq. Tr.
Kent and Surrey General Eye Infirmary.	7, Dean-street, Southwark.	E. Complin, Sec.
Surrey and Southwark Infirmary, for curing Diseases of the Eye and Ear.	1828.	J. H. Holmes, Esq. Tr. H. Richardson, Esq. Sec.
Royal Westminster Infirmary, for Diseases of the Eye.	7, Marylebone-st., Piccadilly.	J. Courteney, Sec.
Royal Dispensary, for Diseases of the Ear.	10, Dean-st., Soho. 1816.	W. Cobbe, Esq. Treas. Geo. Whiting, Sec.
City of London Truss Society, for the relief of the Ruptured Poor throughout the Kingdom.	76, Queen-street, Cheapside. 1807.	S. Cartwright, Esq., Treasurer. Thos. Eglinton, Sec.
Rupture Society.	Golden-square. 1805.	H. Hoare, Esq. Treas. J. Poynder, Esq. Sec.
Southwark Surrey Truss Society.	217, High-street, Southwark. 1796.	J. C. Smith, Esq. Tr. R. C. Smith, Esq. Sec.
Daranian Society.	48, Berners-street, Oxford-street.	W. Toulmin, Sec.
Royal London and Westminster Infirmary, for the treatment of Cutaneous Diseases.	24, Gt. Marlborough street. 1819.	Jas. Hodgson, Sec.
Asylum for the cure of Scrofula and Cancer.	13, Terrace, Bayswater. 1822.	Jas. Millar, Sec.
Infirmary for Asthma, Consumption, and other Diseases of the Lungs.	Union-street, Bishopsgate.	W. Ellis. Esq., Treas. S. Amory, Esq., Sec.
National Vaccine Establishment.	13, Percy-street.	Dr. Turner, Treas. Dr. Hue, Sec.
Vaccine Pock Institution.	Broad-street, Golden-square. 1799.	
London Vaccine Institution.	Union-court, Holborn.	Dr. Walker, Director.
Royal Jennerian Society.	32, Burr-street, Tower-hill.	Sir C. Price, Bart. Tr. John Fox, Sec.

3. Lying-in Hospitals, Infirmaries, and Charities.

Queen Charlotte's Lying-in Hospital.	Manor-house, Lisson-grove. 1752.	Jno. Wright, Esq. Tr. A. C. Thiselton, Sec.
City of London Lying-in Hospital, for the reception and delivery of Poor Pregnant Married Women.	City-road. 1750.	John Capel, Esq. M.P. Treasurer. Jas. Clift, Sec.
British Lying-in Hospital, for Married Women.	Brownlow-st., Long-Acre. 1749.	Mess. Hoares, Fleet-st. Yewd and Truwhitt, Secretaries.

Name and Object.	Situation, and Date of Establishment.	Treasurer and Secretary.
General Lying-in Hospital.	York-road, Lambeth. 1755.	Jno. Lett, Esq., Treas. W. Warren Hastings, Secretary.
Westminster Lying-in Institution.	Queen-square. 1801.	J. Davis, Esq., Treas. J. Elliott, Esq., Sec.
Royal West London Infirmary and Lying-in Institution.	28, Villiers-street, Strand. 1818.	John Robertson, Sec.
Royal Maternity Charity, for delivering Poor Married Women at their own habitations.	17, Little Knight Rider-street, Doctors' Commons. 1757.	J. F. Dove, Esq., Trea. F. Wilson, Sec.
The Ladies' Benevolent Society, for the relief of Poor Married Lying-in Women.	34, Salisbury-sq. 1813.	Thos. Seaward, Sec.
Benevolent Institution, for the sole purpose of delivering Poor Married Women at their own habitations.	1780.	Sir Richard Birnie, Treasurer. Jas. Abbott, Sec.
The Dorcas Society, for the purpose of affording Pecuniary Relief to Poor Married Women.	1813.	Mrs. Newman, Treas., 21, Cockspur-street. Miss Day, Secretary, 15, Orange-st., Leicester-square.
United Institution of London and Westminster, for the relief and delivery of indigent Married Women, and for the treatment of Diseases incident to Children.	27, Warwick-street, Golden-square; 24, Philip-lane, London-wall. 1822.	H. Braddon, Esq. Hon. Sec.
The City of London Lying-in Institution, for providing poor Married Women with Midwives and Medicines, at their own habitations.	Great Swan-alley, Coleman-street.	H. Pellatt, Esq., Hon. Sec.
Southwark Female Society.	1813.	Mrs. Beales, Sec., 15, West-square.
The Mother & Infants' Friend Society, for relief of Married Women during Confinement, if resident within one mile and a half of St. Swithin's Church.		Mrs. Bell, Treas., 12, St. Swithin's-lane.
Endeavour Lying-in Charity for delivering poor women, with loan of Childbed linen	84, Norton-street, Fitzroy-square. 1794.	W. Hosier, Esq. Treas. E. Stodart, Esq. Sec.
Newman-street Lying-in Charity.		H. Benwell, Sec.
Ladies' Lying-in Charity of St. Andrew, Holborn.	1818.	Mrs. Beresford, Treasurer, Rectory.
The New-court Benevolent Female Society, for visiting and relieving Poor Married Women during the month of their Confinement.	School-house, New-court, Carey-street. 1814.	Mrs. Leonard, Treas. Mrs. Wallis, Sec.

Name and Object.	Situation, and Date of Establishment.	Treasurer and Secretary.
Finsbury Midwifery Institution.	St. John-street, Clerkenwell, 1823.	T. Eglington, Sec.
The Ladies' Benevolent Institution, for clothing and otherwise relieving Jewish Lying-in Married Women, at their own houses.	1812.	Mrs. Rothschild, Treas. Mrs. S. J. Levi, Sec., Artillery-place.
4. DISPENSARIES.		
Charitable Fund and Dispensary.	87, London-wall. 1799.	T. Willatts, Esq., Trea. J. W. Freeman, Sec.
London Dispensary.	21, Church-street, Spitalfields. 1777.	Sir F. Desanges, Treas. Ed. Church, Sec.
London Dispensary.	Artillery-street, Bishopsgate.	
Public Dispensary.	Bishop's-court, Lincoln's-inn, 1782.	R. Twining, Esq. Trea. R. Geldard, Sec.
General Dispensary.	Aldersgate-street, 1770.	John Smith, Esq. Trea. W. Coulson, Esq. Surg. Pullen and Son, Secs.
General Dispensary.	14, Old Burlington-street.	J. H. Fisher, Sec.
Westminster General Dispensary.	9, Gerrard-st., Soho. 1774.	Sir P. Laurie, Treas. W. J. Wills, Sec.
St. George's and St. James's Dispensary.	64, King-street, Golden-square.	C. S. Hardisty, Esq. Tr. J. H. Fisher, Sec.
Western Dispensary.	Charles-st., Westminster. 1789.	C. W. Hallett. Esq. Tr. W. Lindeman, Sec.
Northern Dispensary, for the relief of sick poor Servants of Governors, and delivery of Lying-in Women.	9, Somers-place West, near Pancras Church. 1810.	J. G. Walford, Esq. Treasurer. J. R. Meredith, Sec.
Eastern Dispensary.	Great Alie-street. 1782.	C. Richardson, Esq. Tr W. Baker, Sec.
Bloomsbury Dispensary.	62, Great Russell-st. 1801.	A. Spottiswoode, Esq. M.P. Treasurer. J. Pasmore, Sec.
Finsbury Dispensary.	29, St. John-street. 1780.	T. Lawrence, Sec.
New Finsbury and Central Dispensary.	West Smithfield.	
Islington Dispensary.	High-street, 1821.	R. Oldershaw, Sec.
Surrey Dispensary.	Union-street, Southwark, 1777.	Florence Young, Trea. F. W. Carter, Sec.
South London Dispensary.	90, Great Surrey-st.	H. Searle, Esq. Treas. S. Everest, Sec.
City Dispensary.	76, Queen-street, Cheapside.	J. Williams, Esq. Treas. J. Nokes, Sec.
Middlesex Infirmary and Dispensary.	37, Great Pulteney-street.	C. M. Ullithorne, Sec.
St. Marylebone General Dispensary.	77, Welbeck-street. 1785.	J. Hobbs, Esq. Sec. Thos. Lamb, Treas.

Name and Object.	Situation, and Date of Establishment.	Treasurer and Secretary.
Kent Dispensary.	Broadway, Deptford.	Josh. Carttar, Esq. Sec.
Tower Hamlets Dispensary.	Old Gravel-lane, St. George in the East. 1792.	W. Mellish, Esq. Tr. R. Townson, Esq. Sec.
Chelsea and Brompton Dispensary.	41, Sloane-street.	C. Hopkinson, Esq. Tr. Mr. A. Bowden, Sec.
Charitable Fund and Dispensary.	8, Lilypot-lane.	
London Electrical Dispensary.	16, Bunhill Row, 1793.	J. Esdaile, Esq. Treas. W. Betham, Secretary.
City Institution, for Diseases of Children.	Devonshire-street, Bishopsgate.	E. Cheesewright, Sec.
University of London Dispensary.	4, George-street, Euston-square. 1828.	J. Hogg, Sec.

II. SOCIETIES AFFORDING PECUNIARY RELIEF.

1. District and other Visiting Societies.

Designation.	Date of Establishment.	Treasurer and Secretary.
District Society in connexion with St. John's Chapel, Bedford-row, for visiting and relieving the sick and distressed Poor at their own habitations.	1812.	John Bridges, Esq., Treasurer. Rev. W. F. Vance, M.A., Secretary.
Christchurch Society, for visiting and relieving the sick Poor at their own habitations, and for assisting poor Married Women with Childbed Linen.	Newgate-st.	
Russell-square and Gt. Portland-street District Society, for visiting and relieving the sick and distressed Poor at their own habitations.	1814.	R. J. Chambers, Esq., Treasurer, 9, Keppel-street. Mr. Geo. Cooper, Sec., 2, Mabledon-place.
Spitalfields Benevolent Society, for visiting and relieving the sick and distressed Poor at their own habitations.	1811.	Samuel Hoare, Esq. Treasurer.
District Committee for investigating & ameliorating the state of the Poor, in the Parish of St. Giles in the Fields.		J. S. Reynolds, Esq., Treasurer. Mr. Donaldson, Agent, 8, Museum-street.
London Destitute Sick Society.		M. C. Harris, Esq. Treas., 76, Cornhill.
Female Friendly Society and Asylum, for the relief of poor, infirm and aged Widows, and single Women of good character, who have seen better days.	1802.	Mrs. Vansittart, Pres. Mrs. Lloyd, Edmonton, Treasurer. Mrs. Smith, 7, Camden-row, Peckham.

Designation.	Date of Establishment.	Treasurer, and Secretary.
Female Friendly Union Society, Kent-road.	1806.	Mrs. Arnold, Secretary, Bankside.
The Misericordes Society, for the relief of the sick and afflicted Poor, in the Parish of St. Swithin, London-stone.	1812.	Mr. Ford Hale, Treas., 7, Cannon-street. Mr. S. Windmill, Sec., 4, Salters'-hall-ct.
Friend in Need Society, for visiting and relieving the sick Poor in all parts of London.		Rev. R. Crosby, Rev. W. Kelly, J.W. Parkinson, Esq. Secs.
Strangers' Friend Society, for visiting and relieving the sick and distressed Poor at their own habitations.	1785.	H. Clarke, Esq., Trea., 52, New Bond-st. W. Cooper, 3, Queen-street, Cheapside.
The Ladies' Royal Benevolent Society, for visiting, relieving and investigating the condition of the Poor at their own habitations.	1812.	Miss Robertson, 5, Keppel-street.
Widows' Friend and Benevolent Society, for visiting and relieving the sick and distressed Poor at their own habitations.	54, Salisbury-square. 1808.	John Poynder, Esq., Treasurer. Mr. T. Seaward, Secretary.
District Visiting Society.	32, Sackville-street. 1829.	J. Labouchere, Esq., Treasurer. Hugh Hill, Esq. Sec.
St. Andrew, Holborn, & St. George the Martyr, Parochial Visiting Society.	Vestry, St. Andrew's-ct. 1829.	Rev. R. Black & Rev. F. P. Hoole, Secretaries.

2. General and particular Benefit, Pension, and Annuity Societies.

City of London General Pension Society, for allowing permanent Pensions to decayed Artisans, Mechanics, and their Widows, resident within ten miles of the metropolis.	1818.	Alderman Sir Peter Laurie, Treasurer. D. Richardson, Esq., Sec., 8, Ironmonger-lane.
General Annuity Society, for allowing permanent Annuities to decayed Merchants, Tradesmen, Clerks, Shopmen, and other persons, male and female, of a similar class of society, of good character, resident within six miles of the metropolis.	1827.	Wm. Thompson, Esq., Alderman, M.P., President. D. Richardson, Esq., Sec., 8, Ironmonger lane.
British Pension Fund, instituted for the purpose of granting Monthly Pensions of £2. to Males, and £1. 8*s*. to Females, to poor and aged Tradesmen, Artisans, Mechanics, Clerks, Shopmen, Porters, the Widows of such persons, and male and female Servants, residing within twelve miles of London.		John Fox, Hon. Sec.

Designation.	Date of Establishment.	Treasurer, and Secretary.
London Annuity Society, for the Widows of Members.	Old Fish-street, St. Paul's. 1765.	H. H. Shepherd, 11, Chatham-pl., Black friars.
National Benevolent Institution, for the relief of respectable and worthy Persons in the middle ranks of life.	45, Gt. Russell-street. 1812.	Francis Scotney, Secretary.
East London Pension Society, to allow permanent Pensions to deserving and meritorious persons of both sexes, who have attained the age of sixty years; without distinction of religion, profession, or calling, and including domestic Servants.		J. Miles, 5, Mitre-st. Aldgate.
Southwark Pension Society.		F. W. Carter, Sec., High-st., Southwark.
Royal Union Pensions, established in memory of his late R. H. the Duke of York, for the benefit of aged persons of both sexes, in reduced circumstances.	5, Lancaster-pl. Waterloo-bridge.	
Lambeth Pension Society, for allowing permanent Pensions to decayed Housekeepers of the said parish, above 60 years of age.		Robt. Watmore, Hon. Sec., Essex-place, Lambeth.

3. PROFESSIONAL AND OTHER ASSOCIATIONS, FOR RELIEF OF DISTRESSED MEMBERS.

Corporation for the relief of poor Widows and Children of Clergymen; and the Society for clothing, maintaining, and educating poor Orphans of Clergymen of the Established Church in England, until of age to be put apprentice,—commonly known by the name of the SONS OF THE CLERGY.	1665.	J. M. Grimwood, Esq. Trea., 2, Bloomsbury-place.
The Stewards of the Feast of the Sons of the Clergy.		F. H. Markland, Esq., Treas. and Sec.
Society for the Relief of Widows and Children of Clergymen, in the Diocese of London.	1791.	Bishop of London, President. Robt. Watts, Sec.
Society for the Relief of poor Clergymen of the Established Church resident in the Country.	1780.	A. Martin, Esq., Treas. Rev. H. G. Watkins, Sec.
Associate Fund for the Relief of poor Dissenting Ministers.	18, Cheapside.	Joseph Procter, Esq., Treasurer. Rev. T. Lewis & Rev. J. Yockney, Secs.
Society for Relief of the necessitous Widows and Children of Protestant Dissenting Ministers.	1733.	H. K. Smithers, Sec., 71, Cornhill.

Designation.	Date of Establishment.	Treasurer, and Secretary.
Congregational Fund for aiding Ministers and educating students at Homerton Academy.	1783.	T. Conder, Sec.
Society for the Relief of aged and infirm Protestant Dissenting Ministers.	1818.	Isaac Hailes, Collect.
Law Association, for the benefit of Widows and Families of Professional Men, in the Metropolis and its vicinity.	1817.	Joseph Kay and H. Sandys, Esq. Treasurers. Charles Murray, Sec.
Society for the management & distribution of the Literary Fund.	4, Lincoln's-inn-fields, 1797. Inc. 1818.	Rev. R. Yates, & J. J. Burn, Esq., Treas. J. Snow, Clerk & Coll.
Naval Charitable Society.	NavyPayOffice. 1791	S. Hancock, Sec.
Merchant Seaman's Society, for the relief of Seamen disabled in the Merchant's Service, their Widows, Children, &c.	Incorporated 20 Geo. II. Royal Exchange.	J. C. Powell, Esq. Treasurer. W. Watson, Sec.
The Maritime Cambrian Society.	1805.	S. Spencer, Treasurer.
London Maritime Institution.	Royal Exchange. 1791.	J. Robertson, Esq., Tr. W. Watson, Esq. Sec.
Medical Benevolent Society.	Charterhouse-square. 1816.	Dr. Clutterbuck, Trea. H. C. Field, Sec.
Society for the benefit of Widows of Officers of the Hospital and Regimental Medical Staff of the Army.	5, Berkeley-st. Piccadilly. 1816.	T. Tanner, Sec.
Army Medical Officers' Benevolent Fund Society.	1820.	T. Tanner, Sec.
Society for the Relief of Widows and Orphans of Medical Men, in London and its vicinity.	1788.	— Upton, Esq., Treas John Watson, Sec., 43, Berners-street.
Schoolmasters' Society.	4, Lincolns Inn Fields. 1798.	Rev. Dr. Russell, Trea Jos. Snow, Sec.
Benevolent Society of Blues for the relief of persons educated at Christ's Hospital, their widows and orphans.	1824.	H. Woodthorpe, Esq. Treasurer. H. Richards, Esq., 11 Basinghall-st., Sec.
Artists' General Benevolent Institution, for the relief of decayed Artists, their Widows and Orphans.	1814.	W. J. Roper, Assistant Secretary.
Incorporated Artists' Benevolent Fund.	1810.	Sir J. Swinburne, President.
Engravers' Benevolent Fund, for the relief of Widows and Orphans.		Josiah Neale, Hon. Sec., 312, Strand.
Royal Society of Musicians.	Instituted 1738. Incorp. 1790.	C. J. Ashley, Sec.
Covent-garden Theatrical Fund.	1765.	Daniel Egerton, Sec.
Drury-lane Theatrical Fund.	1777.	J. Hughes, Sec.

Designation.	Date of Establishment.	Treasurer, and Secretary
Minor Theatres Theatrical Fund.		
Choral Fund.	1791.	John Eames, Sec. and Collector, 4, Church-place, Bedford-street, Covent-garden.
Musical Fund, for the relief of decayed Musicians, their Widows and Orphans.	1786.	J. Kendrick, Esq., Tr. T. Hammond, 15, Little Chapel-st., Soho.
Philanthropic Harmonists.	Titchfield-st. 1811.	H. R. Longmate, Sec., 74, Berwick-street.
Commercial Travellers' Society.		Thos. Peach, Sec.
Society of British Banking and Commercial Clerks.	1802.	R. Dunell, Sec.
Laudable Society of United Clerks, for allowances in Sickness, Payments to Widows, Widowers, &c.	Woolpack, St. Peter's Alley, Cornhill. 1805.	T. W. Hughes, Sec.
Stock Exchange Fund.	1801.	
Printers' Pension Society, for the relief of aged and distressed Printers and their Widows.	1827.	W. Venables, Esq. Tr. J. Bleaden, Hon. Sec., 47, Lothbury.
Goldsmith and Jewellers' Annuity Institution.		Joseph Steward, Sec.
Watch and Clockmakers' Benevolent Institution, for the relief of aged necessitous Workmen of good character, belonging to the several branches in the manufacture of Clocks and Watches, and of the Widows of such workmen.	6th March, 1815.	F. B. Adams, Treasurer, St. John's-sq. Mr. Wm. Webb, 54, Great Sutton-street, and Mr. W. Hodson, 44, St. John-street-road, Secretaries.
Licensed Victuallers' Asylum.		John Gill, Sec.
Butchers' Charitable Institution.		B. Pride, Sec., 13, Chichester-rents, Chancery-lane.
Jewish Institution for the relief of their Indigent Blind.	1819.	A. Solomon, Esq. Pr. J. Lazarus, Esq. Treas.

4. Societies for General Relief.

Scottish Hospital for the relief of natives of Scotland who have acquired no parochial settlement.	Crane-court, Fleet-street. 1665—1775.	Hon. W. Frazer. Trea. Mr. R. Auld, Sec.
Society for the relief of distressed Widows, applying within the first month of their widowhood.	32, Sackville-street. 1823.	Pr. Hoare, Esq. Treas. Josh. Fencher, Esq., Hon. Sec.
General Philanthropic Society, for the relief of the manufacturing and labouring Poor in temporary distress, and for other benevolent purposes.	Clerkenwell. 1813.	R. Carpenter, Esq., Treas. Geo. Selby, Esq., Islington-road, Sec.
Nightly Shelter to the Houseless.	75, Old Broad-street.	Sir J. W. Lubbock, Bt. J. Jones, Sec.

Designation.	Date of Establishment.	Treasurer, and Secretary.
City of London General Benevolent Institution, for administering temporary aid to the poor within 5 miles of the Royal Ex.	37, Old Jewry, 1820.	— Hulbert, Esq., Trea. Mr. Tucker, Sec. 22, Addle-hill.
Society for the discharge and relief of persons imprisoned for small Debts, throughout England and Wales.	7, Craven-st., Strand. 1772.	Earl Romney, Pres. B. B. Cabbell, Esq., Treasurer.
Surrey Institution, for the discharge and relief of persons imprisoned for Debt in the County Gaol.	1812.	T. Harrison, Esq., Trea. Rev. W. Mann, Sec.
Philanthropic Society at Mile-End, for the same and other purposes.		Leonard Willshire, Esq., Treas.
Sheriffs' Fund.	Newgate.	Under-Sheriffs.
Sailors' Home, or Royal Brunswick Maritime Establishment, for the reception, lodging, and protection of the persons and property of Sailors, the improvement of their morals, saving them from the crimps of London, and regularly shipping them in outward bound vessels to all parts of the world, for his majesty's navy, the coast guard, or revenue service.		J. Pyke, Secretary, 17, Wellclose-square.
Society for Charitable Purposes.	1714.	F. S. Stephenson, Sec.
Dollar Society.	15, Castle-st. Oxford-st.	
The Ladies' Charity.	Wardour-st. Soho. 1713.	
Southwark Female Society.	1813.	Miss Steele and Miss Russell, Secs.
British Female Union Society.		T. W. Talbot, Sec.
London aged Christian Society for the permanent relief of the decidedly Christian poor.	32, Sackville-street.	Rev. — Ellersby, and Rev. J. Blackburn, Secs.
Association for the relief of the Poor of the City of London and parts adjacent.	City Kitchen, New-st., Blackfriars. 1700.	J. Phipps, Sec.
Caledonian Society, for affording relief to distressed and destitute persons, of all countries and descriptions.	25, Old Burlington-street. 1820.	—— Gay, Esq., Treas.

III. PENITENTIARY AND CORRECTIONAL INSTITUTIONS.

Bridewell Hospital.	Blackfriars. 1558.	Sir R. C. Glyn, Pres. R. Clark, Esq., Trea.
Magdalen Hospital.	St. George's-rd. 1758.	B. Lancaster, Esq., Tre. John Prince, Sec.

Designation.	Date of Establishment.	Treasurer, and Secretary.
Refuge for the Destitute.	Hoxton. 1806.	Ed. Forster, Esq., Tre. Rev. R. Crosby, Sec.
Philanthropic Society, for the admission of the offspring of Convicts, and the reformation of criminal poor Children.	St. George's-fields. Incor. 1806. Inst. 1788.	R. Collier, Superintendent.
Surrey Asylum, for the employment and reformation of discharged Prisoners.	New Kent-road.	P. J. Butt, Esq., Hon. Sec., Dulwich.
London Female Penitentiary.	Pentonville. 1807.	W. A. Hankey, Esq., Treas. Mr. J. Leach, Sec.
Society for the suppression of Mendicity, for the purpose of checking the practice of Public Begging, with all its baneful and demoralizing consequences, by putting the laws in force against Impostors who adopt it as a trade, by affording prompt and effectual assistance to those whom sudden calamity, and unaffected distress, may cast in want and misery upon the public attention.	13, Red Lion-square. 1818.	Sam. Bosanquet, Esq., Treasurer. Mr. John Stevens, Assistant Manager.
Guardian Society, for the preservation of Public Morals, providing a temporary asylum, with suitable employment, for Females who have deviated from the paths of virtue, and who have either been removed, by the operation of the law, from the public streets, or have been awakened by conscience to a sense of their guilt and danger.	Asylum, New-road, St. George's East.	J. Labouchere, Esq., Treas. James Brown, Assistant Secretary, 48, Hatton-garden.
Westminster Asylum, for the reception of those who have been prosecuted and punished for their first offences, and of those who, not having been prosecuted or punished, have been guilty of dishonest practices; also, as a refuge for destitute orphans, and for females wandering from the paths of virtue, but not having been in the habit of prostitution.	Ship-court, York-street. 1822.	Miss Neave, Treasurer and Secretary.
Society for the improvement of Prison Discipline, and for the reformation of Juvenile Offenders.	18, Aldermanbury. 1815.	T. F. Buxton, Esq. M.P. Treasurer. Samuel Hoare, Esq., Chairman.
British Society, for the reformation of Female Prisoners.	1821.	Mrs. R. Williams, Tr. Miss Steele, Mrs. Steinkopf, and Miss Robarts, Secretaries.

IV. MISCELLANEOUS BENEVOLENT INSTITUTIONS, FOR PROMOTING GENERAL AND PARTICULAR OBJECTS OF HUMANITY.

Designation.	Date of Establishment.	Treasurer, and Secretary.
National Guardian Institution, for protecting the public from the evils arising from the frequent and too often fraudulent practice of giving false characters to bad servants, and for the encouragement of those servants whose characters will bear the test of strict inquiry, by providing them with respectable situations, granting relief in sickness or distress, and affording them asylums in old age.	46, Bedford-row.	W. T. Hodsoll, Esq., Treasurer. J. Covernton, Esq., Secretary.
London Society, for the improvement and encouragement of female servants by annual and other rewards.	110, Hatton-garden. 1815.	Rev. H. G. Watkins and John Wheelton, Hon. Secs.
British Society for rewarding Servants.	11, Waterloo-place. 1792.	R. S. Illingworth, Sec.
Society for superseding the necessity of Climbing Boys, by encouraging a new method of sweeping chimneys, and for improving the condition of Children and others employed by chimney-sweepers.	1803.	W. Tooke, Esq., Treasurer, 39, Bedford-row. S. Woods, Secretary, 8, George-yard, Lombard-street.
Invalid Asylum for respectable Females.	Stoke Newington. 1825.	Mrs. Allen, Treasurer.
Society for the Prevention of Cruelty to Animals.	32, Lincoln's-inn-fields.	LewisGompertz, Hon. Sec.
Society for preventing Loss of Life by Fire.		W. H. Pepys, Esq., Treasurer. John Hudson, Secretary, 85, Cheapside.
African Institution.	3, Fludyer-st., Westminster. 1808.	Jno. Thornton, Esq. W. Empson, Esq.
Society for protecting the natural and constitutional rights of Infants born in the Colonies of England.	1829.	T. Edwards, LL.D. Hon. Sec., Bedford-square.
Anti-Slavery Society.	18, Aldermanbury. 1823.	S. Hoare, Esq. Treas. Thomas Pringle, Sec.
American-Indian Civilization Society.	1795.	
Society for the relief and instruction of poor Africans and Asiatics.	1805.	Z. Macaulay, Esq. Tr. Rev. W. B. Collyer, Secretary.
Society of Friends of Foreigners in Distress.		W. Vaughan, Esq. Tr. Charles Murray, Sec.

Designation.	Date of Establishment.	Treasurer. and Secretary.
The Swiss Society.		John Heiger, Sec.
Society for the Suppression of Vice.	61, Lincoln's-Inn-fields. 1802.	S. Hoare, Esq. Treas. George Prichard, Sec.
Spitalfields Benevolent Society.		— Kinnaird, Esq. Trea.
Spitalfields Blanket Association.		Peter Bedford, Treas. John Beck, Secretary.
Endeavour Society, to disseminate the true principles of the Established Church, by forming a library of orthodox works, and by distributing cheap books, tracts, and papers gratis, to the poor; also, to form a supply of medical and midwifery assistance, with the loan of child-bed linen, and pensions.	2, Johnson's-buildings, Circus, Blackfriars-road, 1794.	Mr. Dean, Sec.
Charity for distributing Bread, Meat, and Coals among the Jewish Poor, during the winter season.	1780.	Andrew Cohen, Esq., Treasurer. J. A. Levy, Esq., Secretary.
Society for improving the Condition of the Irish Peasantry.	21, Regent-st. 1822.	H. Bradshaw, Esq. Tr. J. C. Michell, Sec.
Royal Humane Society, to collect and circulate the most approved and effectual methods for recovering persons apparently drowned, or dead from any other cause; and to suggest and provide suitable apparatus for, and bestow rewards on those who assist in, the preservation and restoration of life.	29, Bridge-st., Blackfriars. 1774.	B. Hawes, Esq., Treasurer. John Frost, Secretary.
Royal National Institution for preservation of Life from Shipwreck.	12, Austin-Friars. 1824.	R. Perceval, Esq. Tr. T. Edwards, Esq. Sec.
Society for the encouragement of Industry and reduction of Poor Rates.	King's-head, Poultry. 1818.	B. Wills, Secretary.
Society for the promotion of permanent and universal Peace.	1816.	J. Scott, Treasurer. Rev. J. Hargreaves, Secretary.
Society for Charitable Purposes, in Marylebone & Westminster.	1774.	Sir W. W. Pepys, Tr. T. S. Stephenson, Sec. 25, Wells-street.

V. RELIGIOUS IMPROVEMENT.

1. Distribution of Bibles and Tracts.

Society for promoting Christian Knowledge.	Lincoln's-Inn-fields. 1799.	Archbp. of Canterbury President. W. Parker, M.A., Sec.
Prayer-Book and Homily Society.	34, Salisbury-square. 1813.	J. Wilson, Esq., Treas. Rev. C. R. Pritchett, Secretary.

Designation.	Date of Establishment.	Treasurer, and Secretary.
British and Foreign Bible Society.	Earl street, Blackfriars. 1801.	Ld. Teignmouth, Pres. A. Brandram and J. Hughes, Secs.
Religious Tract Society.	56, Paternoster-row. 1799.	J. B. Wilson, Esq., Tr. Rev. W. Sibthorp, B.D. Rev. J. Hughes, M.A., Rev. C. Scholl, Secs.
St. Swithin's Association, to promote the objects of the Prayer-Book and Homily Society, and the Hibernian Society, and the distribution of Religious Tracts.		J. Sharp, Esq., Treasurer. Mr. Ford Hale and Mr. Adeney, Secretaries.
Naval and Military Bible Society.	32, Sackville-st. 1780.	J. W. Bazalget, Commander, R.N., and J. M. Close, Major R.A., Secretaries.
Westminster Auxiliary Bible Society.		
City of London Auxiliary Bible Society.	1812.	R. C. Dillon, J. Clayton, and T. M. Coombs, Secs.
North-West London Auxiliary Bible Society.	37, Wigmore-st. Cavendish-sq.	Rev. B. Wood, Rev. J. Slatten, and C. J. Thrupp, Secs.
North East London Bible Society.	1812.	S. Hoare, Treasurer.
Southwark Auxiliary Bible Society.	1812.	Rev. W. Mann, G. Clayton, and C. Dudley, Secretaries.
Book Society for promoting Religious Knowledge among the poor.	19, Paternoster-row. 1750.	J. Palmer, Secretary.
Merchant Seaman's Auxiliary Bible Society.	Winchester House. 1818.	J. Deacon, Esq., Treasurer. E. Suter and J. Truman, Secretaries.

2. Religious Objects in General.

Society for promoting the enlargement, building, and repairing of Churches and Chapels.	2, Parliament-street. Incorp. 1818.	N. W. Connop, Esq. Tr Rev. W. J. Rodber, Secretary.
British Society for promoting the Religious Principles of the Reformation.	32, Sackville-street. 1827.	R. Williams, Esq. M.P. Treasurer. E. Gordon and W. G. Rhynd, Secretaries.
Society for Promoting Ecclesiastical Knowledge.	1829.	Rev. Dr. F. A. Cox. Rev. Dr. Bennett, Secs.
Auxiliary Society for promoting the Principles of the Reformation in St. Giles's and the neighbouring Districts.		T. Meux, Esq., Treasurer. Rev. W. F. Vance and G. J. Robinson, Secs.
London Society for promoting Christianity among the Jews.	Wardrobe-place. 1808.	Rev. G. S. Hawtrey. J. B. Cartwright.

Designation.	Date of Establishment.	Treasurer, and Secretary.
Philo-Judæan Society.	Bouverie-st. 1826.	H. Drummond, Esq., Treasurer. J. A. Browne, Sec.
Continental Society.	Bartlett's-buil. 1818.	J. Scott, Esq., Treas.
Christian Union Society.		C. Adeney, Sec.
Irish Evangelical Society.	Finsbury-sq. 1814.	Rev. A. Tidman.
Hibernian Society.	48, Hatton-garden. 1806.	Rev. T. Webster.
Baptist Irish Society.	1814.	J. Ivimey, Sec.
London Itinerant Society for Spreading the Gospel within 15 miles of London.	1796.	Rev. W. Broadfoot.
Village Itinerancy Society.	Old Broad-st. 1803.	E. Ashby, Sec. Rev. G. Collikson.
Irish Society of London to promote Scriptural Instruction in Ireland and England, through the medium of the Irish Language.	1822.	
Hebrew Institution, to place the means of subsistence by honest industry only, within the reach of those Hebrews who are deprived of their usual resources, in consequence of embracing or inquiring into the truth of Christianity.		H. Drummond, Esq., Treasurer.
Friends of the Hebrew Nation, to promote the Knowledge of the revealed mind of God amongst the Hebrew people, and to afford Employment and Religious Instruction to Individuals of that nation.		Oliver Farrer, Esq., Treasurer. John Tudor, Sec.
British and Foreign Seaman's and Soldier's Friend Society, or Mariner's Church, and Riverman's Bethel Union.	1820.	Captain Allen. E. Phillips.
Sailors Home, or Brunswick Maritime Establishment.	1829.	
Port of London Society for promoting Religion among Seamen.	1818.	R. H. Martin, Esq., 5, America-square, Minories, Treasurer.
Port of London and Bethel Union Society.	18, Alderman-bury. 1818.	R. H. Martin, Esq. Tr. G. S. Clarke, Sec.
Episcopal Floating Church Society.	1828.	

3. Missionary Societies.

Society for the Propagation of the Gospel in Foreign Parts.	77, Gt. Queen-st., Lin.-inn-fields, Inc. 1701.	Rev. A. Hamilton, Sec Rev. W. P. Lendon Assist.-Sec.

Designation.	Date of Establishment.	Treasurer, and Secretary.
Society for the Conversion of Negro Slaves in the British West India Islands.	Incorp. 1794.	Rev. Dr. Barrett, Sec.
Church Missionary Society for Africa and the East.	Salisbury-sq. 1800.	Rev. E. Bickersteth. Mr. Woodroffe, Sec.
Baptist Missionary Society.	Fen-court, 1792.	Rev. John Dyer, Sec.
Baptist Home Missionary Society.	1814.	Rev. J. Edwards, Sec. Rev. Dr. Cox.
London Missionary Society.	Austin-friars. 1795.	Rev. John Arundel, Sec. Rev. W. Orme.
Home Missionary Society.	11, Chatham-pl. Blackfriars. 1819.	T. Thomson, Esq., Trea. E. A. Dunn, J. Fletcher and F. Moore, Secs.
Metropolitan City Missionary Society.	1827.	H. Drummond, Esq. Pres., R. S. Montague, Esq. Treas.
Wesleyan Methodist Missionary Society.	77, Hatton-garden.	Rev. G. Morley, Rev. John James, and Rev. Elija Hoole, Secs.
Missions of the United Brethren. (Moravian.)	Fetter-la, 1732.	Rev. C. J. Latrobe, Sec.
London Association in aid of the Missions of the United Brethren commonly called Moravians.	1817.	J. G. Lockett, Esq., Treasurer, 1, Upper Conway-street. Rev. J. Bull and Rev. J. Clayton, Secs.
Islington Church Missionary Institution.		Rev. — Pearson, Prin.
London Auxiliary Society in aid of the Baptist Highland Mission.		J. Fergusson, Sec.
The Ladies Aid to the Moravian Missions.		Mrs. Lewis Hensley, 42, Great James-st., Bedford-row. Miss M. Rainforth.
Christian Sailors' General Missionary Society.		
Mission College	Hoxton.	Rev. Dr. Henderson.
The Missionary and Tract Society of the New Jerusalem Church.	1821.	Mr. Thos. Jones, Treasurer, Camden-town. W. H. Cook and W. C. Boulton, jun., Secs.
Huntingdon Home Mission Fund.		

VI. EDUCATION.

1. General Education of the Poor.

Christ's Hospital.	Newgate-street. 1558.	Thos. Poynder, Esq., Treasurer. T. Wilby, Clerk.
Foundling Hospital.	Guilford-street. 1739.	S. Cox, Esq., Treas. Morris Lievesley, Sec.

Designation.	Date of Establishment.	Treasurer, and Secretary.
District Orphan School.	Kingsland.	J. Deacon, Esq. Trea. T. Cope, and C. J. Major, Secs.
Adult Orphan Institution.	Regent's Park.	Rev. J. J. Ells, M.A., Sec.
St. Ann's Society Schools for maintaining, clothing, and wholly supporting the Children of every class of Poor and Necessitous Persons from all parts, but more particularly the Children of respectable Parents.	St. Ann's-lane, Aldersgate; Peckham. 1709.	M. Attwood, Esq. M.P. Treas. Thos. Jones, Sec.
Marine Society for training up poor Boys for the Royal Navy, East India Company's Service, Merchant Ships, and Fishing Vessels.	Bishopsgate. Instituted 1756. Incorporated 1772.	S. Thornton, Esq. Treasurer. Thomas King, Sec.
Asylum for Female Orphans.	Westminster-bridge. Incorp. 1800.	Thos. Lett, Esq. Trea. Edward Foss, Secretary.
London Orphan Asylum for the reception and education of destitute Orphans, particularly those descended from respectable Parents.	Clapton, and 10, St. Mary Axe. 1813.	Wm. Thompson, Esq., Treasurer. Rev. J. C. Abdy and Rev. A. Reed, Secretaries.
Society for the promotion of Education and Industry in Canada.	1825.	
Newfoundland and British North America School Society.	13, Salisbury-square, Fleet-street. 1823.	J. Wells, Esq., M.P., Treasurer. S. Codner and Percival White, Secretaries.
School for the Indigent Blind.	St. George's-fields. 1799.	S. Bosanquet, Esq., Tr. Charles Dodd, Sec.
German and English School of the German St. George's Protestant Congregation.	Little Alie-st. Goodman's-fields.	— Dohrman, Treas.
German Lutheran School.	Savoy, Strand.	
Bakers' Orphan School.		T. P. Davidson, Sec.
Jews Free School for 600 Boys and 300 Girls.	Bell-lane, Spitalfields.	G. P. Beylus, Secretary.
Merchant Seaman's Orphan Asylum.	4, Clark's ter., Cannon-st. Rd. St. George's in the East.	G. S. Clarke, R. G. Martin, & J. Martin, Secretaries.
Congregational School for Children of Dissenting Ministers.	Lewisham, Kent. 1810.	W. A. Hawkes, Esq. Tr. A. Browne, Esq. Sec.
The Protestant Dissenters' Charity School.	Bartholomew-close. 1717.	
The Protestant Dissenting Charity School.	Wood-street, Spitalfields. 1717.	
Protestant Dissenters' School, and Female Institution.	Shakspeare-walk, Ratcliff.	
Huntingdon Education Society.	1894.	

Designation.	Date of Establishment.	Treasurer, and Secretary.
London Society Protestant Schools	North-street, Little Moorfields. 1829.	T. Challis, Esq. Trea.
National Silkweavers' Society for the sole purpose of giving constant Employment to the Silkweavers of Spitalfields, and to Educate 500, and Clothe 200 of their Children, and also to Educate an unlimited number of the Children of other industrious Silkweavers who are not Members of the Establishment.	15, Devonshire-street, and 59, Oxford-st. 1826.	W. Thurnell, Acting Manager and Treasurer. W. G. Garland, Sec.
Licensed Victuallers' School for the Maintenance and Clothing of the Children of deceased distressed Members.	1814.	J. Gill, Secretary.
Masonic Institution for Clothing and Educating the Sons of indigent and deceased Freemasons.	1798.	T. Moore, Esq. Treas. A. C. Thiselton, Secretary.
Royal Freemasons' Charity for Female Children.	1788.	J. Ramsbottom, Esq., M.P., Treasurer. W. Fletcher, Hon. Sec.
East London Catholic Institution for Clothing and Educating the Children of the Poor.		James M'Cann, Sec.
Westminster French Charity School.	Windmill-st. 1747.	
Clergy Orphan Corporation for Clothing, Maintaining, and Educating poor Orphan Children of Clergymen of the Established Church of England until of age to be put apprentice.	St. John's-wood Mary-le-bone. Inst. 1749. Incorp. 1809.	Rev. C. Cambridge and Rev. Dr. Shepherd, Treasurers. Rev. G. A. E. Marsh, M.A., Secretary.
Westminster Blue Coat School.	Tothill-fields.	
Westminster National Free School.	St. Margaret's. 1812.	Rev. J. Webber, Tr. Mr. T. Higgs, Sec.
Green Coat Hospital.	St. Margaret's, Westminster. 1638.	
Cass's School.	Aldgate. 1710.	Sir C. Flower, Bt., Tr.
Philological School, or School of General Instruction.	Gloucester-pl., Lisson-grove. 1792.	J. Turner, Esq., Treasurer. Ed. Abbott, Esq., Sec.
City of London School of Instruction and Industry.	Mitre-st., Aldgate. 1806.	Sir J. W. Lubbock, Tr. T. Saunders, Sec.
British and Foreign School Society.	Borough-road. 1805.	Wm. Allen, Esq., Trea. D. D. Scott, Sec.
The Bedford Free School.	Tottenham-ct.-road. 1805.	J. Kay, Esq., Treas. H. J. White, Sec.
Orphans' Working School.	City-road. 1760.	H. Waymouth, Esq. Tr. J. Smith, Sec.

Designation.	Date of Establishment.	Treasurer, and Secretary.
The Girls' School.	Burlington-gardens. 1699.	
The Instructive Institution.	Swan-st. Minories. 1802.	
Ladies' Charity School.	King-street, Snow-hill.	Isaac Stride, Esq., Secretary.
Infant Orphan Asylum for the Relief of Infants under seven years of age.	South-Sea Chambers.	A. H. Kenney, D.D., Secretary. Ed. Wentworth, Coll.
Associated Catholic Charities for Educating, Clothing, and Apprenticing Children of poor Catholics.		Hon. Ed. Petre, Treasurer. Mr. Booker, Sec. 61, Bond-street.

2. Provincial and District Schools.

Welch Charity School for Educating, Clothing, and wholly Maintaining 150 poor Children born of Welch Parents, not entitled to Parochial Settlement in or near London.	Gray's-Inn-rd. 1718.	Sir W. W. Wynne, President. Col. Wood, Treasurer. A. Hayward, Sec.
Caledonian Asylum for Supporting and Educating the Children of Soldiers, Sailors, and Marines, Natives of Scotland, who have died or been disabled in the service of their country, and of indigent Scotch Parents, resident in London, not entitled to parochial relief.	Copenhagen-fields, Islington. 1815.	W. Fairlie, A. Glennie, and T. Hutchon, Esqrs. Treasurers. John Lees, Secretary.
Highland Society of London.	Inst. 1778. Incorp. 1816.	H. Longlands, Esq. Tr. J. Macdonald, Sec.
London Corresponding Board of the Highland School Society.	Incorporated 1709 and 1736.	Sir P. Laurie, Treas. James Crombie, A.M. James Thompson.
Benevolent Society of St. Patrick.	Stamford-st. 1784.	T. Bainbridge, Esq. Tr. J. C. Michell, Sec.
St. Patrick's Charity Schools.		G. Keating, jun., Sec.
East London Irish Free Schools.	Goodman's-yd., Minories. 1817.	J. Burnell, Esq., Treasurer.
Ladies' Hibernian Female School Society.		Mrs. R. Webb, Secretary.
Irish Society of London for promoting the Education of the Native Irish, through the medium of their own language.	32, Sackville-street. 1821.	Rev. G. Mutter, A.M. Secretary.
Southwark Auxiliary School Society.	1817.	Rev. Dr. Collyer, and Rev. T. Harper, Secs.
Infant School, connected with St. John's Chapel, Bedford-row.		Mr. Quilter, Treas. Mr. Cardale, Sec.
Offertory School.	St. James's, Westminster.	
Finsbury Charity Schools.	1792.	

Designation.	Date of Establishment.	Treasurer, and Secretary.
Ladies' Charity School of St. Sepulchre, London, for Clothing and Educating 51 poor Girls.	King-street, Snow-hill. 1702.	Sir Charles Price, Bt., Treasurer. I.Stride,Esq.Hon.Sec. W. Stephens, 5, Dowgate-hill, As. Sec.
Aldgate School, the first Protestant Parish School established in London.	1608.	

N. B. It has not been considered necessary to insert the several ward and parochial schools by name, as it would in fact comprise a list of all the wards and parishes in and near London, in each of which there is one school at least, supported by voluntary subscription.

Worcestershire Society;—W. Warren Hastings, Esq., Hon. Sec.

Herefordshire Society;—B. Bodenham, Esq., Hon. Sec., 5, Furnival's-inn.

Somersetshire Society;—P. Hurd, Esq., Hon. Sec.

Yorkshire Society, for maintaining, clothing, and educating the Children of indigent Yorkshire Parents, resident in the Metropolis. Instituted in 1812.—J. Hall, Esq., Treasurer; H. Tristram, Esq., Hon. Sec.

Gloucestershire Society;—W. H. Keyne, Esq., Sec.

Wiltshire Society;—W. Lewis, Esq., Hon. Sec.

Westmoreland Society;—James Burra, Esq., Sec., 3, King-st., Cheapside.

Cumberland Benevolent Institution. 1813.—John Birkett, Esq., Hon. Sec.

N.B. The above Societies are chiefly founded for purposes of Education of Youth belonging to the several Counties, although other objects of benevolence are also provided for.

3. Sunday Schools and Religious Instruction.

Designation.	Date of Establishment.	Treasurer, and Secretary.
Society for the support and encouragement of Sunday Schools throughout the British Empire.	1785.	Lord Carrington,Pres. T. Smith, Secretary, 1, Little Moorfields.
Society of Patrons of the Anniversary Meeting of Charity Schools in the Cathedral Church of St. Paul's.	52, Hatton-garden.	William Child, Esq. and John Capel, Esq., M..P., Treasurers. John Bird, Secretary.
National Society, for promoting the Education of the Poor, in the Principles of the Established Church.	Baldwin's-gardens. 1810.	Josh.Watson, Esq.,Tr. J. C. Wigram, Sec.
City of London National Schools, for the Education of the Children of the Poor on the Madras System, and in the Principles of the Established Church.	1813.	Rev. R. Black, B.D., Secretary.

Designation.	Date of Establishment.	Treasurer, and Secretary
Spitalfields Sunday Schools.		T. F. Buxton, Esq., M.P., Treasurer.
Sunday School Society	1785.	
Sunday School Society for Ireland.	32, Sackville-street. 1818.	Earl Roden, Pres.
Christian Instruction Society.	5, Paternoster-row. 1825.	J. Smith, Esq. Rev. J. Blackburn and Mr. J. Pittman, Secs.
Central National Schools.	82, High-street, Mary-le-bone.	C. W. Moore, Sec.
Sunday School Union.	5, Paternoster-row. 1803.	W. F. Lloyd. C. P. Jackson.
Southwark Sunday Schools.	1817.	C. Barclay, M.P., Pres.

Society for Erecting & Maintaining a Building in the Metropolis for the Meetings of Religious, Charitable, and Scientific Institutions.	Strand. 1829.	Sir Thos. Baring, Bart. M.P. Treasurer. Mr. J. R. Clark, Sec., 31, Northampton-square.

SUBSCRIPTION CLUBS.

Name.	Numb.	Where situate.	Secretary.
Senior United Service.	1500.	Pall Mall.	C. Hanbury, Esq.
Junior United Service.	1500.	Regent-street.	J. Hatch, Esq.
Royal Naval	500.	160, Bond-street.	— Foggo, Esq.
Athenæum	1000.	12, Pall Mall.	E. Magrath, Esq.
Union	1000.	Union-square.	J. Mackenzie, Esq.
University	1000.	Pall Mall, East.	C. Steward, Esq.
Verulam	1000.	35, Lincoln's-inn-fields.	
Oriental	1000.	Hanover-square.	T. Cornish, Esq.
Alfred	500.	23, Albemarle-street.	C. Beloe, Esq.
Travellers'	500.	49, Pall Mall.	S. W. Singer, Esq.
Wyndhams	500.	8, St. James's-square.	J. Llewellin, Esq.
Literary Union . . .	500.		C. Ruding, Esq. Steward.
Arthur's	800.	69, St. James's-street.	J. Gainer.
Brooke's	500.	61, St. James's-street.	— Wheelwright.
Boodle's	500.	28, St. James's-street.	
Randel's	500.		
White's	500.	38, St. James's-street.	George Raggett.
Graham's	500.	87, St. James's-street.	
Cocoa-Tree	500.	65, St. James's-street.	John Raggett.
Portland	500.	1, Stratford-place.	
Guards	400.	St. James's-street.	
Albion	400.	85, St. James's-street.	
Colonial	400.	60, St. James's-street.	T. Ellis.
St. James's	400.	50, St. James's-street.	

LITERARY, SCIENTIFIC, AND PROFESSIONAL INSTITUTIONS.

Those marked thus † have Charters or Acts of Incorporation.

NAME.	Date of Charter or Establishment.	Where Situate.	Usual Days and Hours of Meeting.	Anniversaries.	President and Secretaries.
†Royal Society of London, for improving Natural Knowledge	15th July, 1662 2d April, 1663 8th April, 1669	Somerset-place	Thursday, at 8½.	30th Nov.	D. Gilbert, Esq., M.P. Pres. Capt. E. Sabine, P. M. Roget, M.D. Secs.
†The Society of Antiquaries of London	2d November, 1751	ditto	Thursday, at 8	23d April	Earl of Aberdeen, President H. Ellis, Esq., F.R.S. N. Carlile, Esq., F.R.S. Scs.
†Royal Society of Literature	15th Sept. 1825	3, Parliament-street	Wednesday, at 3	30th April	Bishop of Salisbury Rev. R. Cattermole, Sec.
Society for the Encouragement of Arts, Manufactures, and Commerce	1754.	John-street, Adelphi	Wednesday, at 7½	~~~~	H.R.H. the Duke of Sussex, President Arthur Aikin, Esq. Secretary.
†Royal Institution	1800	Albemarle-street	Friday, at 8½	~~~~	Duke of Somerset, F.R.S., President E. R. Daniell, Esq., F.R.S., Secretary Joseph Fincher, Ast. Sect.
†London Institution	Inst. 1807, Inc. 1815.	Finsbury-circus	~~~~	30th April	Geo. Hibbert, Esq. President
Russell Institution	1828.	Great Coram-street	~~~~	~~~~	H.R.H. the Duke of Gloucester E. W. Brayley, Secretary
Western Literary and Scientific Institution	~~~~	47, Leicester-square	~~~~	~~~~	H. Drummond, Esq. Pres. Thomas Snelson, Sec.
City of London Literary and Scientific Institution	~~~~	165, Aldersgate-st.	~~~~	~~~~	G. Stacey, Secretary

NAME.	Date of Charter or Establishment.	Where situate.	Usual Days and Hours of Meeting.	Anniversaries.	President and Secretaries.
Metropolitan Literary Institution	~~~	Chatham-place	~~~	~~~	
Surrey Institution	~~~	Union-row, Camberwell.	~~~	~~~	Rev. J. Vane, President G. Green, Hon. Secretary
Southwark Literary and Scientific Institution	~~~	Trinity-place, Blackman-street	~~~		
Society for the Diffusion of Useful Knowledge	Jan. 1827	4, South-square, Gray's-inn	~~~	~~~	H. Brougham, Esq., M.P., F.R.S. Thomas Coates, Esq., Secretary
University of London	11th Feb. 1826	Bloomsbury	~~~	~~~	The Council. Leonard Horner, Esq. F.R.S., Warden & Sec. Thos. Coates, Esq., Clerk
†King's College	14th August, 1829	Somerset-place	~~~	~~~	H. W. Smith, Esq , Sec.
†Linnean Society	26th March, 1802	32, Soho-square	1st and 3d Tuesdays in the month, at 8½.	25th May	Lord Stanley, M.P., Pres. J. E. Bicheno, Esq., F.R.S., Secretary
†Horticultural Society	17th April, 1808	21, Regent-street	1st and 3d Tuesdays in the month, at 1	1st May	T. A. Knight, Esq., F.R.S., President Joseph Sabine, Esq., F.R.S., Secretary
†Zoological Society	27th March, 1829	33, Bruton-street	1st Thursday in the month, at 3	29th April	Marquess of Lansdowne, F.R.S., President N. A. Vigors, Esq., A.M., F.R.S., Secretary
Geological Societ	23 April, 1826	Somerset-house	1st and 3d Fridays in the month, at 8½	20th Feb.	Rev. Adam Sedgwick, A.M., F.R.S., President W. J. Broderip, Esq., F.R.S., W. H. Fitton, M.D. Prests. R. J. Murchison, Esq., F.R.S., Secretary
		Lincoln's-inn-fields	2d Friday in	~~~	J. South, Esq., F.R.S. Pres.

Astronomical Society	~~~	Lincoln's-inn-fields	2d Friday in the mo. at 8	~~~	J. South, Esq., F.R.S. Pres.
†Royal Asiatic Society	1820.	14, Grafton-st., Bond-street	Saturday, at 2	14th March	Rt. Hon. C. W. W. Wynne, M.P., President J. Alexander, Esq. M.P. Pres. Wm. Huttman, Secretary
†Royal Academy of Arts	1768	Somerset-place.	~~~	~~~	Sir T. Lawrence, President H. Howard, Esq. Secretary
British Institution	4 June, 1805	Pall Mall.	~~~	~~~	Earl of Aberdeen, President Wm. Barnard, Keeper
Society of British Artists	~~~	Suffolk-street, Pall-mall East	~~~	~~~	T. C. Hofland, Secretary
Society of Painters in Water Colors	1804	Pall-mall East	~~~	~~~	J. Cristall, Esq., President Charles Wild, Secretary
Royal Academy of Music	1822	Tenterden-street	~~~	~~~	Dr. Crotch, President Mr. W. S. Smith, Secretary
Royal Harmonic Institution	~~~	246, Regent-street	~~~	~~~	
Philharmonic Society	~~~	~~~	~~~	~~~	
Cymmrodorion, or Metropolitan Cambrian Institution	~~~	~~~	~~~	~~~	Sir W. W. Wynne, President G. Jones, Esq., Secretary
†Royal College of Physicians	~~~	Pall-mall East	Monday	~~~	Sir H. Halford
†Royal College of Surgeons	1800	57, Lincoln's-inn-fields	~~~	~~~	H. L. Thomas, Esq., Pres. Edward Belfour, Secretary
Universal Medical Institution	~~~	~~~	~~~	~~~	
Medical and Chirurgical Society	1805	57, Lincoln's-inn-fields	~~~	~~~	P. M. Roget, President R. Lee, M.D., Secretary
Medical Society of London	1773	Bolt-court, Fleet-st.	Thursday, at 8½	~~~	Arch. Billing, M.D., Prest. J. T. Conquest, Wm. Cooke, Secs.
Medico-Botanical Society	~~~	23, Sackville-street	Wednesday, at 8	5th Feb.	T. Gibbs, Esq., President H. Gibbs, Secretary
Westminster Medical Society	~~~	~~~	~~~	~~~	George Green, Secretary

NAME.	Date of Charter or Establishment.	Where situate.	Usual Days and Hours of Meeting.	Anniversaries.	President and Secretaries.
Hunterian Society	~~~	18, Aldermanbury	~~~	~~~	A. Billing, M.D., President
Phrenological Society	~~~	~~~	~~~	~~~	
Royal Veterinary College	1791	Pancras	~~~	~~~	E. Coleman, Esq., Profes. W. J. T. Merton, Dispenser
Law Institution	16th Feb. 1827	Chancery-lane	~~~	~~~	R. Maugham, Secretary
Law Society	~~~	New Boswell-court	~~~	~~~	W. B. Flexney, Secretary
Metropolitan Law Society	9th March, 1819.	~~~	~~~	~~~	W. Leake, Esq., M.P., Prin. Jas. Anderton, Secretary
†Institution of Civil Engineers	April, 1828	15, Buckingham-st.	Tuesday, at 8	~~~	T. Telford, Esq., F.R.S. Pres. G. C. Gibbon, Secretary
Architects' Society	~~~	Thatched House	Thursday	~~~	
London Mechanics' Institution	2d December, 1823	29, Southampton-buildings, Chancery-lane	~~~	~~~	Geo. Birkbeck, M.D., President Robert Christie, Secretary
National Repository	1828.	Charing-cross	~~~	~~~	Hon. G. Agar Ellis, M.P., F.R.S., Chairman P. S. Tull, Secretary

*** Greater difficulty than was anticipated has attended the formation of the foregoing lists, in which it is feared some omissions and occasional inaccuracies may be found to occur; to correct which, and enable the Editors, in the *Companion* for next year, to complete this summary of institutions constituting the peculiar boast of London, the Treasurers or Secretaries of all Institutions are respectfully requested to favour the Editors with the particulars of Charities and Societies, if any omitted, and with notice and correction of errors detected, together with the last printed Report of the Institution, addressed to Mr. C. Knight, 13, Pall-mall East.

PART IV.

THE LEGISLATION, STATISTICS, PUBLIC IMPROVEMENTS, AND CHRONICLE OF 1829.

XXIX. ABSTRACT OF IMPORTANT PUBLIC ACTS

PASSED IN THE LAST SESSION OF PARLIAMENT.

[10 Geo. IV.—1829.]

CATHOLIC ASSOCIATION.

[10 Geo. IV. c. 1.—Passed 5th March, 1829.]

This is an act for the suppression of dangerous associations or assemblies in Ireland, particularly with reference to the Catholic Association; to be perpetual so far as relates to the said Association, and the residue in force for one year from the time of its enactment, and until the end of the then next Session of Parliament.

MARINE MUTINY ACT.

[10 Geo. IV. c. 5.—Passed 23d March, 1829.]

This is an act for the regulating of his Majesty's Royal Marine forces while on shore.

MUTINY ACT.

[10 Geo. IV. c. 6.—Passed 23d March, 1829.]

An Act for punishing Mutiny and Desertion, and for the better Payment of the Army and their Quarters.

This act differs from the last Mutiny Act, 9 Geo. IV. c. 4, principally in the simplicity of its arrangement, by which it has been very considerably shortened; the former act consisting of 163 sections, and the present of only 77. The following (with a few exceptions of no general importance) are the alterations which have been made in the provisions of the former act.

By sect. 1.—The numbers of forces are reduced from 91,075 to 89,723.

9.—The powers of District and Garrison Courts-Martial are greatly enlarged; it being enacted, "that a District or Garrison Court-Martial shall consist of not less than nine commissioned officers, and may try offences and sentence any non-commissioned officer or soldier to imprisonment, solitary or otherwise, and with or without hard labour, in any public prison or other place appointed by such court, and also to corporal punishment (not extending to life or limb), and to forfeiture of all advantage as to additional pay or to pension on discharge, in addition to any other punishment, for desertion—for purloining or selling government stores—for stealing from a comrade or military officer—for producing false or fraudulent accounts or returns, whereby increased expense has been or would be brought upon the public—for embezzlement or misapplication of

money intrusted to him, for which offences such soldier may further be put under stoppages, till the same be made good, or for such disgraceful conduct as shall induce such offender to be discharged, as unfit for the service, from vice or misconduct, he having been once previously convicted of disgraceful conduct by a court-martial; and any District or Garrison Court-Martial may deprive a soldier of the allowance in lieu of beer, or of additional pay, for any period not exceeding two years, for habitual drunkenness; provided, that in all the foregoing cases the sentences shall be confirmed by the general officer, governor, or senior officer in command of the district, garrison, island, or colony, except in cases of mutiny, when the sentence may be confirmed and carried into execution on the spot by the officer in the immediate command of the troops: and the president of every court-martial, other than a General Court-Martial, not being under the rank of captain, shall be appointed by the officer convening such court-martial; provided, that such court-martial shall not have power to pass any sentence of death or transportation."

21. The reward for apprehending a deserter is increased from 20*s.* to any sum not exceeding 40*s.*

33. The justice by whom any person having hastily enlisted, and being desirous of being discharged, shall be discharged, is to give a certificate thereof signed with his hand, to the recruit, specifying the cause thereof.

By the last act, the penalties "for giving or procuring to be given any false certificate whereby to excuse any soldier for his absence from any muster, &c.;" "for making any false muster, and receiving money for mustering, and for knowingly mustering any one by a wrong name," were different. But now the penalty is the same; viz. the offender, upon proof by two witnesses before a General Court-Martial, to be cashiered and disabled from holding any civil or military employment.

And, the penalties by the last act, for "offering falsely to be mustered," for "willingly lending any horse to a trooper mustered, if the lender's, and if not the lender's," were different; but now the penalty for all is the same; viz. 20*l.*

55. The act establishes certain rates to be paid for carriages belonging to the troops, and adds a new provision, that "no penalties in any act relating to highways shall apply to the number of horses or oxen, or weight of loading, of the aforesaid carriages, which shall not on that account be stopped or detained."

61. The penalty on constables, &c. is the same for all offences against the act; viz. any sum not above 5*l.* nor less than 40*s.*

62. The same provision is made with regard to military officers.

73. "All penalties not exceeding 20*l.* over and above any forfeiture of value or treble value shall be recovered under the provisions of 3 Geo. IV. c. 23, and 5 Geo. IV. c. 18, which acts shall be used in Scotland for the recovery of such penalties as fully as if they had extended thereto; and all penalties exceeding 20*l.* shall be recovered by action in some of the Courts of Record at Westminster or in Dublin, or in the Court of Session in Scotland, and in no other court."

74. A moiety of some penalties by the last act were given to the poor, but now "one moiety of every penalty shall go to the informer, and the other shall be paid to the General Agent for the Recruiting Service, to be at the disposal of the Secretary at War; and every justice who shall adjuge any penalty, shall within four days, at the farthest, report the same to the Secretary at War."

The following provisions in the last act are omitted in the present:—

57. "Innkeepers in Ireland, billetting soldiers, were to furnish eighteen pounds of hay, and six pounds of straw each horse per night, where hay and straw shall not be supplied by contract."

101. "The service of every soldier as to reckoning years of service for estimating any increase of pay or pension, was to commence from the quarter-day antecedent to the day of enlisting. No soldier to receive any pay for any period preceding the day of his actual enlisting."

141. "Paymasters, agents, or clerks of any troop, &c. were to account with executors, &c. of any person entitled to pay, and to deliver an account to them of such pay."

CATHOLIC RELIEF.

[10 Geo. IV. c. 7.—Passed 13th April, 1829.]

An Act for the Relief of his Majesty's Roman Catholic Subjects.

1. Recites that, whereas by various acts certain restraints and disabilities are imposed on the Roman Catholic subjects of his Majesty, which it is expedient should be discontinued; and that certain oaths and declarations, commonly called the declaration against transubstantiation and the invocation of saints, and the sacrifice of the mass, are required to be taken as qualifications for sitting and voting in parliament, and for the enjoyment of certain offices, it is enacted that the same (save as hereinafter excepted) are hereby repealed.

2. That from and after the commencement of this act, it shall be lawful for any person professing the Roman Catholic religion, being a Peer, or who shall be returned a member of the House of Commons, to sit and vote in either house, being in all other respects duly qualified, upon taking and subscribing the following Oath, instead of the oaths of Allegiance, Supremacy, and Abjuration:—'I, A. B. do sincerely promise and swear, 'that I will be faithful and bear true allegiance to his Majesty King ' and will defend him to the utmost of my power against all 'conspiracies and attempts whatever, which shall be made against his 'person, crown, or dignity; and I will do my utmost endeavour to dis-'close and make known to his Majesty, his heirs, and successors, all 'treasons and traitorous conspiracies which may be formed against him 'or them; and I do faithfully promise to maintain, support, and defend, 'to the utmost of my power, the succession of the crown, which suc-'cession, by an act entitled "An Act for the further limitation of the 'crown, and better securing the rights and liberties of the subject," is 'and stands limited to the Princess Sophia, Electress of Hanover, and 'the heirs of her body, being Protestants; hereby utterly renouncing 'and abjuring any obedience or allegiance unto any other person claim-'ing or pretending a right to the crown of this realm: and I do further 'declare, that it is not an article of my faith, and that I do renounce, 'reject, and abjure the opinion that princes excommunicated or deprived 'by the Pope, or any other authority of the See of Rome, may be deposed 'or murdered by their subjects, or by any person whatsoever; and I do 'declare that I do not believe that the Pope of Rome, or any other foreign 'prince, prelate, person, state, or potentate, hath or ought to have any 'temporal or civil jurisdiction, power, superiority, or pre-eminence, 'directly or indirectly, within this realm. I do swear, that I will defend, 'to the utmost of my power, the settlement of property within this realm, 'as established by the laws: and I do hereby disclaim, disavow, and 'solemnly abjure any intention to subvert the present Church Establish-'ment as settled by law within this realm; and I do solemnly swear, that 'I will never exercise any privilege to which I am or may become enti-'tled, to disturb or weaken the Protestant religion or Protestant govern-'ment in the United Kingdom; and I do solemnly, in the presence of 'God, profess, testify, and declare, that I do make this declaration, and 'every part thereof, in the plain and ordinary sense of the words of this 'oath, without any evasion, equivocation, or mental reservation whatso-'ever. So help me God.'

4. No Peer, and no person, being a Roman Catholic, who shall be returned as member of the House of Commons, to be capable of sitting voting, unless he shall first take and subscribe the said oath; and any

Roman Catholic who shall sit or vote in either House, without having first taken the said oath, shall be subject to the same penalties as are by law provided in the case of persons sitting or voting in either House of Parliament respectively, without taking the oaths now required by law.

5. Roman Catholics to be entitled to vote at elections of members of parliament for England and Ireland, and for the representative peers of Scotland and Ireland, and to be elected such representative peers, being in all other respects duly qualified, upon taking the oath.

6, 7. The oath to be administered in the same manner and by the same officers as the oaths for which it is substituted; and a like certificate of the taking the oath shall be given as in other cases; and persons administering oaths at elections to take an oath for the duly administering the said oath, and granting certificates of the same.

8. Enables Roman Catholics to elect and be elected members of parliament for Scotland, being otherwise duly qualified, upon taking the oath.

9. No person in holy orders of the Church of Rome to be capable of being elected to serve in parliament; and, if elected, such election to be void; after being elected, if any person shall take holy orders, his seat to become thereby vacated; and any person, in any of such cases, who shall sit or vote as a member of the House of Commons, shall be subject to the penalties enacted by the Act 41 Geo. III., c. 63, "to remove doubts respecting the eligibility of Persons in Holy Orders to sit in the House of Commons;" proof of the celebration of any religious service, according to the rites of the Romish Church, to be taken as *primâ facie* evidence of such person being in holy orders.

10. Enables Roman Catholics to hold civil and military offices under his Majesty, except as hereinafter excepted.

11. Not to exempt Roman Catholics from taking any other oath required by law on admission into any office, &c.

12. Roman Catholics not to hold the office of Guardians and Justices of the United Kingdom, or Regent of the same; or the office of Lord High Chancellor of Great Britain or Ireland, Lord Lieutenant of Ireland, or High Commissioner to the General Assembly of the Church of Scotland.

13. Not to affect or alter any of the provisions of an act 7th Geo. IV. c. 72, "to consolidate and amend the laws which regulate the levy and application of church rate and parish cesses, and the election of churchwardens, and the maintenance of parish clerks in Ireland."

14. Roman Catholics eligible to become members of lay corporations, upon taking the oath hereby appointed, and such other oaths as may now by law be required of any persons becoming members of such corporations.

15. Such members not to vote or in any manner to join in the presentation or appointment to any ecclesiastical benefice, or any office connected with the United Church of England or Ireland, or the Church of Scotland, being in the disposal of such corporate body.

16. Not to enable persons, otherwise than as they are now by law enabled, to exercise any office in the Established Churches of England, Ireland, or Scotland; in any ecclesiastical court of judicature, or any cathedral or collegiate foundation; in any of the universities, or any of the colleges or halls of the said universities, or any colleges or schools within the realm; or to repeal or interfere with any local statute, established by competent authority in any university, college, &c., by which Roman Catholics shall be prevented from being admitted thereto, or from residing or taking degrees therein; or to enable them to present to any ecclesiastical benefice whatsoever, or to alter the laws now in force respecting the right of presentation.

17. Where any right of presentation shall belong to any office in the gift of his Majesty, and such office be held by a Roman Catholic, the right of presentation shall devolve upon the Archbishop of Canterbury for the time being.

18. No Roman Catholic to advise the Crown concerning the disposal

of any preferment in the Established Churches; and any person convicted shall be deemed guilty of a misdemeanor, and be disabled from holding any office, civil or military, under the Crown.

19. Every Roman Catholic who shall be elected to any corporate office within the United Kingdom shall, within one calendar month next before or upon his admission into the same, take the oath hereinbefore appointed, in presence of the proper corporate officers, or of two justices of the peace, the same to be entered in a book or other record to be kept for that purpose.

20. Every Roman Catholic who shall be appointed to any office under the Crown, shall, within three calendar months next before such appointment, or before he acts in any such office, take the said oath either in the Court of Chancery, or the Courts of King's Bench, Common Pleas, or Exchequer, at Westminster or Dublin, or before any Judge of Assize, or in any Court of Quarter-session in Great Britain or Ireland, for the county or place where the person so taking shall reside; or in any of the courts of Session, Justiciary, Exchequer, or Jury, or in any Sheriff, or Stewart court, or in any Burgh court, or before the magistrates of any Royal Burgh in Scotland; and the proper officer shall cause the same to be preserved among the records of the court, and deliver a certificate when the same shall be demanded, upon payment of two shillings and sixpence; such certificate to be sufficient evidence of the oath having been taken.

21. Any Roman Catholic acting in office without having taken the oath, to forfeit to the King 200*l*., and his appointment to become void.

22. The oath to be taken by Roman Catholic naval and military officers, at the same time and in the same manner as the oaths now required by law are directed to be taken.

23. No oath to be required from any Roman Catholic to enable him to hold any real or personal property, other than such as may be tendered to his Majesty's other subjects; and the oath herein appointed, to stand in the place of all oaths now in force for the relief of Roman Catholics from any disabilities or penalties; and the proper officer of any of the courts before-mentioned shall deliver a certificate of the said oath having been duly taken, as often as the same shall be demanded of him, upon payment of one shilling; such certificate to be sufficient evidence of the oath having been duly taken.

24. Any person, other than the person thereunto authorized by law, who shall assume the name, style, or title of archbishop of any province, bishop of any bishopric, or dean of any deanery in England or Ireland, shall, for every offence, forfeit 100*l*.

25. No person holding any judicial, civil, or corporate office shall be present at any place of religious worship, except the Established Churches of Great Britain or Scotland, in the peculiar habit of his office, or attended with the insignia thereof, under penalty of forfeiture, for every such offence, of 100*l*.

26. No Roman Catholic Ecclesiastics to exercise any of the rites of their religion, or wear the habits of any order, save within the usual places of worship, or in private houses, under penalty of forfeiture, for every such offence, of 50*l*.

27. Not to repeal or affect any provision of an act 5th Geo. IV., c. 25, entitled an "Act to repeal so much of an Act passed in the 9th William III. as relates to burials in suppressed monasteries, abbeys, or convents in Ireland, and to make further provision with respect to the burial in Ireland of persons dissenting from the Established Church."

28. Every Jesuit, and member of any other religious society of the Church of Rome, in the United Kingdom, shall, within six months after the commencement of this act, deliver to the clerk of the peace for the county or place where he shall reside, a notice or statement according to a form set forth, which notice such clerk shall preserve among the records

of such county or place without any fee, and shall transmit a copy of such notice to the Chief Secretary of the Lord Lieutenant, if in Ireland, or to one of the principal Secretaries of State, if in Great Britain; and any person not complying herewith shall forfeit, for every calendar month during which he shall remain in the United Kingdom, without having delivered such notice, the sum of 50*l.*

29. Any Jesuit, or member of any religious society as aforesaid, coming into this realm after the commencement of this act, shall be deemed guilty of a misdemeanor, and, being convicted thereof, shall be sentenced to be banished from the United Kingdom for life.

30. Any natural-born subject of this realm, being a Jesuit, or a member of any other religious society, at the time of the commencement of this act, who may be out of the realm, is empowered to return; and is required, within six months after his first returning, to deliver such notice as before directed, under penalty of forfeiture of 50*l.* for every month during which he shall neglect or refuse so to do.

31. Proviso, that any one of the principal Secretaries of State, being a Protestant, may grant permission, by a licence in writing, to any Jesuit, or member of any other religious order, to come into the United Kingdom, and to remain therein for such period as he shall think proper, not exceeding in any case six months; and may revoke the same before the expiration of the time mentioned therein, if he think fit; and any person to whom such licence shall have been granted, not departing within twenty days after the expiration of the time mentioned, or notice of revocation, shall, on conviction, be deemed guilty of a misdemeanor, and be banished for life.

32. Accounts of licences to be annually laid before both Houses of Parliament.

33. Any Jesuit, or member of any other religious society as aforesaid, who shall, within any part of the United Kingdom, admit any person to become a member of any such religious order, or society; or shall administer, or cause to be administered, any oath or engagement for that purpose, shall be deemed guilty of a misdemeanor in England or Ireland, and in Scotland shall be punished by fine and imprisonment.

34. Any person so admitted a member of any religious order to be deemed guilty of a misdemeanor, and, upon conviction, to be banished for life.

35. Any person sentenced to be banished under the provisions of this act, who shall not depart within thirty days after the pronouncing of such sentence, may be conveyed to such place out of the kingdom as his Majesty shall direct.

36. And if, after being sentenced as aforesaid, any offender shall be at large after the end of three months, such person, on conviction, to be transported for life.

37. Not to affect any religious order or establishment of females bound by religious vows.

38. All penalties imposed by this act to be recovered by information filed in the name of the Attorney-general for England or Ireland, as the case may be, or of the Advocate-general for Scotland, in the respective Courts of Exchequer.

40. The operation of this act to commence at the expiration of ten days after the passing thereof.

QUALIFICATION OF FREEHOLDERS (Ireland).

[10 Geo. IV. c. 8.—Passed 13th April, 1829.]

An Act to amend certain Acts of the Parliament of Ireland relative to the Election of Members to serve in Parliament, and to regulate the Qualification of Persons entitled to vote at the Election of Knights of the Shire in Ireland.

1. After reciting certain acts of the 33rd Henry VIII., and 35th George

III., and that it is expedient to amend the laws now in force under the last-mentioned act relating to the registry of freeholds, so much of the former act as relates to the qualification of electors for counties in Ireland being rated at 40*s.* is repealed.

2. No person to be admitted to vote for a knight of the shire for any county in Ireland (save as hereinafter provided) unless such person shall have a freehold in lands, tenements, or hereditaments, of the clear yearly value of 10*l.* at the least, over and above all charges, except taxes, and county, church, and parish rates.

3. Nor unless such freehold, if under the yearly value of 20*l.*, be registered pursuant to the provisions of this act.

4. A session, for the purpose of registering freeholds within this act, to be held for each county in Ireland, by the assistant-barrister of such county, on such days and at such places as the Lord Lieutenant shall appoint, and the clerk of the peace for each county to give forty days notice at least, in a form specified, that such session will be holden.

5. Every person intending to register a freehold, to give to the clerk of the peace for the county, notice in writing of such intention, thirty clear days, at least, before the day appointed for the holding such session, stating, according to a prescribed form, his name and residence, the description of the lands, &c. in respect of which such application is to be made, and whether he intends to register such freehold at the annual sum of 20*l.* or of 10*l.*; and the clerk to enter all such notices in a list, in a form prescribed, and, fifteen days, at least, before the holding of such session, cause a copy of such list to be published in some newspaper printed in such county or in an adjoining one.

6. At each such session, the names of the persons contained in such lists to be called by the clerk of the peace, and each person so called to produce the deed, or instrument, by which he claims such freehold, or if not held by deed, &c., otherwise to establish his title; and also make it appear that a solvent and responsible tenant could afford to pay for the same, without collusion, the annual sum of 20*l.*, or 10*l.*, as the case may be, over and above all charges save as hereinbefore excepted, and over and above any rent to which the person so claiming may be liable in respect of the same.

7. The assistant-barrister to examine every deed, &c., and to investigate any title which any claimant shall, in any other manner, seek to establish, and to determine whether the same is or is not sufficient to entitle the person claiming thereunder to an estate of freehold; and also examine, as well by the oath of the person so claiming, as by any evidence offered, either in support of, or in opposition to, such claim, whether a responsible tenant could afford to pay, without collusion, as an additional rent for such freehold, the annual sum of 20*l.*, or 10*l.*, as the case may be; and also inquire into the truth of the several particulars in the oath hereinafter prescribed to be taken for the registry of such freehold.

8. If the assistant-barrister adjudge the claimant entitled to register such freehold, he is to take the oaths directed in certain schedules, where such freehold shall be of the annual value of 20*l.* not arising from a rent-charge, where the same shall arise from a rent-charge, and where it is of the value of 10*l.*

9. The clerk of the peace to deliver to the person so adjudged to be entitled, a certificate, signed by such assistant-barrister and such clerk, stating, that such person has duly registered a freehold at the annual sum so proved as aforesaid, to stand in the place of the certificate of registry now by law required.

10. Every such oath to be signed by the assistant-barrister before whom the same shall be taken, and by him delivered to the clerk of the peace, to be kept among the records of the county; and the assistant-barrister is required to take care that the oath be agreeable to the form prescribed, and no objection in point of form to be allowed when so signed.

11. In case the claimant be not entitled to register, the assistant-barrister to make an order, adjudging such person not to be entitled to register such freehold, and to set forth the objection by reason whereof such person is adjudged to be not entitled to register; such order not to prejudice any future application at any subsequent general or quarter-sessions.

12. Any person, against whose claim such order is made on the ground of insufficiency of value, may appeal therefrom to the judges of assize, who are hereby required to try, by the verdict of a jury, whether the freehold is of the annual value at which the claimant seeks to register it; such jury to be returned in the same manner as for cases of appeal from the assistant-barrister in civil bills, and to take an oath prescribed; and if such jury give a verdict in favour of the claim, and the judge consider the claim in other respects to be well founded, the order complained of to be thereupon reversed.

13. Where registry is refused on any other ground, claimant may appeal to the judge of assize, who shall have power to review such order, and affirm or reverse the same as shall be fit.

14. In every case in which any order shall, upon appeal, be reversed, the judge shall cause such oath to be taken, and such certificate to be given, and shall sign the same in like manner as the assistant-barrister is required to do, and shall cause such acts to be performed by the clerk of the peace as are herein required, when any freehold is registered, before the assistant-barrister, and such oath and certificate to be of the like effect.

15. After the termination of the session hereby directed to be first holden, such freeholds may be registered at any general or quarter-sessions of such county, upon giving thirty clear days notice, and the proceedings thereon to be in all respects the same as hereinbefore directed.

16. The sheriff, under-sheriff, clerk of the peace, chief constable of the barony, and such other constables as the assistant-barrister may deem necessary, to attend the court during the continuance of such session.

17. Every session so held, to be deemed a court of record; and the assistant-barrister may fine the clerk of the peace, or his deputy, the sheriff, or sub-sheriff, and any chief or petty constable, guilty of any breach of duty in the execution of this act, in any sum not exceeding 5*l.*; and may fine in any sum not exceeding 40*s.*, or imprison for any time not exceeding a fortnight, any person whatsoever, who shall disturb the court.

18. Persons registering at the session to be first holden pursuant to this act, to be exempt from the payment of any fee.

19. The clerk of the peace to have from every person registering a freehold, save as before excepted, 2*s.* 6*d.*

20. 21. Every Quaker, or Moravian, to be allowed to affirm in the form prescribed, and be liable to the penalties of perjury for corrupt affirmation.

22. Any person forging the signature of an officer to an order or certificate, or the signature of any person to an oath or affirmation, or knowingly publishing the same, to be deemed guilty of felony, and liable to transportation for seven years; or to be imprisoned, with or without hard labour, for any term not exceeding three years, at the discretion of the court.

23. Persons refusing to be sworn, or to give evidence in the investigation of any claim, to be fined in any sum not exceeding 10*l.*, to be applied to the use of the County Infirmary, or such charitable institution as the assistant-barrister may think fit; or, in default of payment, to be committed to the county gaol for any term not exceeding two months.

24. A registry of a freehold at the first session held under this act forthwith entitles to vote; at any subsequent session, not until six months after.

25. Freeholders of the annual value of 50*l.* may register such freehold, either before the assistant barrister, or in any of the superior law courts

in Dublin, or before a judge at the assizes; the oath to be taken, and the certificate given as before directed, and to be of the like effect.

26. 27. Where freeholds of the value of 50*l.* or 20*l.* have been duly registered prior to this act, no new register to be required during their subsistence, and no registry to be valid hereafter unless made conformably to this act.

28. No person to be admitted to vote by virtue of any freehold of less than 50*l.*, unless registered within eight years preceding the writ for holding the election.

29. The clerk of the peace to keep the like books, make the like returns, and execute the like duties, as he is now required to do with respect to the registry of freeholds; and all matters now required by law to be, in all respects, observed and fulfilled; save so far as is hereby otherwise provided.

30. All laws now in force touching the registering of freeholders of 50*l.*, 20*l.*, and 40*s.* respectively, and touching the polling of persons qualified to vote, are hereby extended to freeholders of 50*l.*, 20*l.*, and 10*l.*; and the words "ten pounds," are to be substituted for "forty shillings," in all matters relating to such freeholds, as circumstances may require.

31. 32. Freeholds in the county of Dublin to be registered before the chairman of the sessions, in the same manner as before the assistant-barrister in other counties; and the appeal to be to the superior law courts, and all enactments respecting assistant-barristers to be construed as extending in the county of Dublin to the chairman of the session.

33. Each riding of the county of Cork to be deemed a county for the purposes of this act.

34. Nothing in this act to alter or affect the qualification now required to entitle any person to vote by virtue of a rent-charge.

35. Rectors, vicars, or curates not to be obliged to register their freeholds arising from such rectory, &c.

36. The assistant barrister to administer all oaths by this act required to be taken.

38. When the session directed to be first holden has terminated, the Lord Lieutenant to cause notice thereof to be inserted in the "Dublin Gazette;" and in case of a vacancy for the representation of any county before the publication thereof, no writ to issue until after such publication.

39. If after the commencement of this act, and before the publication of the notice of the termination of the said first session, any election shall take place for a new parliament, every person to be entitled to vote as if this act had not been passed.

40. The assistant barrister may adjourn the session if necessary.

41. The Lord Lieutenant to direct the payment out of the consolidated fund of such sum as he shall deem sufficient to remunerate each assistant-barrister and clerk of the peace, for attendance at the session to be first holden in pursuance of this act.

42. This act to commence from and after the day next after the passing.

MILITIA SUSPENSION.

[10 Geo. IV. c. 10.—Passed 13th April, 1829.]

This act suspends until the end of the next session of Parliament, the making of lists, and the ballots and enrolments for the militia of the United Kingdom, reduces the permanent staff, and regulates the allowances of serjeants hereafter to be appointed.

PAYMENT OF CREDITORS (Scotland).

[10 Geo. IV. c. 11.—Passed 13th April, 1829.]

By this act is continued, for two years, "An Act of the 54th Geo. III. c. 137, for rendering payment of creditors more equal and expeditious in Scotland."

EAST INDIA WRITERS.

[10 Geo. IV. c. 16.—Passed 14th May, 1829.]

This is an act to continue the operation of the act 7 Geo. IV. c. 56, for suspending the provisions of an act of his late Majesty, respecting the appointment of writers in the service of the East India Company, and to amend the provisions of an act of the 47 Geo. III., so far as they relate to the period of residence at Hertford College as a qualification for certain offices, enacting, that all the time, not exceeding two years, spent in the college in the course of education after seventeen years of age, shall, in certain cases, be accounted as so much time spent in India.

NEWFOUNDLAND FISHERIES.

[10 Geo. IV. c. 17.—Passed 14th May, 1829.]

This act continues until 31st December, 1832, certain acts (5 Geo. IV. c. 51, 5 Geo. IV. c. 67, and 5 Geo. IV. c. 68), relating to the island of Newfoundland, and the fisheries carried on upon the banks and shores thereof.

CARE AND TREATMENT OF INSANE PERSONS.

[10 Geo. IV. c. 18.—Passed 14th May, 1829.]

An Act to explain, amend, and alter the Act 9 Geo. IV. c. 41, for regulating the care and treatment of Insane Persons in England.

1. Whereas, doubts have arisen as to some of the provisions of the said act, and the same requires to be amended and altered; it is enacted, that five commissioners or more, two of whom, at least, shall not be physicians or surgeons, may assemble for the general purposes of the act at any time, notice of such meeting having been given by the clerk.

2. At such meeting the commissioners may grant or renew licenses to keep houses for insane persons; such licenses to be confirmed, altered, or amended at the next quarterly meeting, and to be of no effect at the expiration of fifteen days after such quarterly meeting, unless then confirmed.

3. Commissioners may reduce fees on licenses in certain cases.

4. And whereas, it was by the said act (s. 19) provided, that in those cases only, where the person licensed should die, the license should continue in force, it is hereby enacted that in case of sickness, fire, &c., the commissioners may grant new licenses to other persons, or for other houses.

5. Detached buildings, used for the reception of insane persons, to be considered part of the house.

6. Where the house shall be licensed to receive less than eleven insane persons, commissioners may direct or permit the visits of the medical attendants to be once in four weeks, instead of twice a week; fifteen days to intervene between each visit.

7. Justices may act at any general or quarter session.

8. The Treasury may issue to the clerk of the commissioners such sums as shall be deemed fit, to defray the expenses incurred under the provisions of these acts.

9. An account of all money received for licenses, and of all money paid out of the Consolidated Fund under the provisions of these acts, shall be made up to the 1st of August in each year, and be laid before Parliament.

10. Jurisdiction of the commissioners includes the cities of London and Westminster, any township, liberty, &c. within seven miles thereof, the borough of Southwark, and the county of Middlesex.

11. Commissioners may require the presence of any person to give evidence.

12. Any person charged upon oath before a justice with an offence under these acts, and not appearing, the justice may summon him—

and if he do not appear, may either hear and determine the case, or issue his warrant for apprehending such person, and the justice before whom he shall appear, or be brought, shall hear and determine the case.

13. Justices before whom any person is convicted, are to cause the conviction to be drawn up in a prescribed form, but no conviction to be void through want of form.

14. Prosecutions for offences under these acts (except such as are within the jurisdiction of the commissioners, or are punishable by summary conviction,) to be by indictment at assizes.

15. And for removing all doubts as to the true meaning of the words "insane persons," they are to be construed to extend to all persons whatsoever who are lunatic, idiot, or of unsound mind.

ASSESSED TAXES COMPOSITION.

[10 Geo. IV. c. 21.—Passed 14th May, 1829.]

This act continues compositions for a further term of one year, and allows persons to enter into composition for the same period.

SWAN RIVER SETTLEMENT.

[10 Geo. IV. c. 22.—Passed 14th May, 1829.]

This is an act to provide, until the 31st of December, 1834, for the government of his Majesty's settlements in Western Australia, on the western coast of New Holland, except New South Wales and Van Dieman's Land; and enacts that his Majesty, by order in council, may authorize any three or more persons residing within the said settlement, to make laws and ordinances, and constitute such courts and officers, as may be necessary for the peace, order, and good government of the said settlements; such laws, &c. to be laid before parliament as soon as they conveniently can be.

SILK DUTIES.

[10 Geo. IV. c. 23.—Passed 22d May, 1829.]

An Act to impose duties on the Importation of Silk and Silk Goods, and to allow drawbacks on the Exportation thereof.

Substitutes new duties in lieu of the old ones—no ship of less than seventy tons burden to import silk manufactures—proviso for commissioners to grant licenses for ships belonging to Dover—upon the seizure of goods the officer to have the whole value.

NATIONAL DEBT ANNUITIES.

[10 Geo. IV. c. 24.—Passed 22d May, 1829.]

An Act to enable the Commissioners for the Reduction of the National Debt to grant Life Annuities and Annuities for Terms of Years.

1. Empowers the Commissioners for Reduction of the National Debt to accept transfers of stock, or receive money for the purchase of annuities for life or lives, immediate or deferred, or for terms of years.

2. Annuities not to be granted on the life of any nominee under fifteen years of age, nor in any other case where the commissioners may think fit to decline.

3. The commissioners are authorized to accept any amount, not less than 100*l.*, of Bank Annuities, or any sum of money, or any amount of Long Annuities equal in value to not less than 100*l.* 3 per cent. Bank Annuities, according to the average price of such annuities, from any persons desirous of purchasing annuities for lives or years, under the regulations of this act, at such rates as shall be specified in tables approved by the Lords Commissioners of the Treasury; and, also, to accept

any sum of money by the year, amounting to 5*l.* or upwards, for the purpose of enabling the persons making such transfer to purchase any of the said deferred annuities for lives; and all Bank Annuities and Long Annuities, so transferred, and all which shall be purchased with any sums of money so paid, are to be carried to the account of the commissioners, and to be then cancelled, and all interest or dividends thereon to cease; persons by or to whom any such annuities are purchased or assigned, to underwrite their acceptance in the books of the Bank of England if required.

4. Purchasers of annuities may appoint nominees, being natives of, and most usually resident within, the United Kingdom, on the continuance of whose life such annuities shall depend; but this not to prevent any persons from purchasing annuities on their own lives.

5. Previously to transfer of stock, or payment of money, parties to sign a declaration, stating the name of the person on whose behalf such annuity is to be purchased, and the name of the person or persons on whose life or lives such annuity is required to be granted, with such other particulars as the commissioners may direct; and also to produce a certificate of the birth or baptism of any person or persons on whose life or lives such annuity is to be purchased, to be certified as therein mentioned.

6. Where the day of birth is not named in the certificate, the age to be calculated from the day of baptism.

7. In case of the applicant not being a native of the United Kingdom, or of the birth or baptism of any nominee not appearing in the register of the parish where baptised, then there shall be produced to the commissioners an affidavit or solemn affirmation stating the age of such nominee, together with the name, occupation, and usual place of abode, place of birth, and names of parents or reputed parents, as therein mentioned.

8. Where an annuity for years is intended to be purchased, the purchaser to sign a declaration of such intention, in a form to be approved of by the commissioners.

9. In order to ascertain the average price of Bank Annuities, the cashier of the Bank of England is required to transmit the daily average price of stocks to the comptroller-general of the aforesaid commissioners.

10. Whenever it shall appear to the comptroller-general that the declaration, certificates, &c. have been comformable to this act, he may grant a certificate thereof, upon the production of which the stock may be transferred, and the party receive an acquittance; such certificate only to continue valid for such purpose for five days from the date.

11. If bargains are made in stock, bearing more than 3 per cent. interest, or in Long Annuities, or money, such stock, &c. shall be converted by computation into 3 per cents.

12. Future Bank Annuities, &c. to be transferable under the provisions of this act.

13. Money paid for the purchase of annuities, to be placed in the Bank to the account of the Commissioners for the Reduction of the National Debt; all such monies to be laid out in the purchase of Bank Annuities, and such annuities to be cancelled as before directed.

14. The Lords Commissioners of the Treasury, or any three or more of them, to direct the Commissioners for the Reduction of the National Debt, to use and adopt such tables as shall be by them approved from time to time; notice of such adoption to be given in the "London Gazette."

15. Purchasers of Annuities to be entitled to such amount of annuity as shall be specified in such tables.

16. No person to be enabled to transfer, for the purchase of any annuity, any less sum than 100*l.* of Bank Annuities, nor any fractional part less than 1*l.* of such Bank Annuities, except in cases provided for by this act; and in every case where the calculation of the amount of any

annuity shall produce a fraction less than 6*d.*, such fraction not to be inserted in the certificate.

17. Life Annuities granted under this act to be added to former annuities for lives payable at the Bank of England; and annuities for terms of years to be carried to a separate account.

18. Life Annuitants may make further purchases on the lives of original nominees without fresh certificates, &c. of the age of the nominees.

19. Persons may purchase Life Annuities on the life of nominees of other annuitants without fresh certificates, &c.

20. Persons nominated by the commissioners, to accept the stock transferred by purchasers of annuities; and all annuities purchased under this and former acts to be chargeable on the Consolidated Fund.

21. The amount of annuities payable, after deducting all expired and unclaimed annuities for lives or years, to be certified to the Commissioners of the Treasury quarterly, who shall issue their warrant to the Bank for payment thereof out of the Consolidated Fund.

22. All annuities to be payable by two equal half-yearly payments, to be made on the 5th of January and the 5th of July, or on the 5th of April and 10th of October, in each year; the first half-yearly payment to be made in the quarter next succeeding the quarter in which the purchase, &c. was completed; and in case of the death of the nominee, a sum equal to the fourth part of the said annuity to be paid to the person entitled to such annuity on the next half-yearly day of payment, provided such payment be claimed within two years; and of deferred annuities, that one half-yearly payment shall have been paid, or become due, at the time of the decease of such nominee.

23. Bargains for annuities not to be made within fourteen days after the quarterly day of payment.

24. Before every half-yearly payment of Life Annuities, a certificate of the life of the nominee, under the hands of the minister, churchwardens, or overseers, or of a justice of the peace, &c. shall be produced; and where such nominee is in the British dominions beyond the seas, of the governor of such place; and where in any foreign kingdom, of the British consul; and if no consul, of the chief magistrate thereof: in annuities for joint lives, where the annuity depends on the longest life, a certificate of the life of either to be sufficient; and where upon joint lives, such certificate to state that both the nominees are living.

25. The person entitled to the annuity to accompany such certificate with an affidavit or affirmation that the matters and things contained in such certificate are true to the best of the deponent's belief, and of the identity of such nominee.

26. On the production of such certificate, &c., and the appearance of the nominees, a certificate to be granted, which, being produced to the proper officer of the Bank of England, shall be sufficient to authorize the receipt of such annuity then due.

27. Certificates of the death of the nominee, or nominees, to be produced upon claim for payment of one-fourth part of expired annuities.

28. Commissioners to receive copies or extracts from the registers of Quakers, or of any dissenting or Roman Catholic chapel, or of other chapels not parochial, as evidence of the death or burial of any nominee, such extracts being duly certified, and accompanied by an affidavit of the identity.

29. Certificates as to the life of a nominee to be applicable to all annuities held for his life; and the personal appearance of a nominee to be considered sufficient.

30. The commissioners are empowered to accept the transfer from persons having purchased any former annuity, of any 3 per cent. Bank Annuities, the amount of which is not less than 20*l.*, or of any stock or money equivalent thereto, as the consideration for any further annuity, to be calculated according to the provisions of this act.

31. An annuity purchased under any act heretofore in force, to be

considered as one entire annuity with any annuity granted under this act.

32. 33. Any immediate, deferred, or reversionary life annuity to be transferable, provided such annuity be transferred entire, and that the original nominee or nominees be not varied or changed; and annuities for years to be transferable, whole or in parts.

34. The form and words for the transfer and assignment of any Life Annuities, used by the Bank of England under the provisions of any former act, to continue and be of force under this.

35. Annuities purchased under this act not to be liable to any taxes, except such as dividends of Bank Annuities are subject to; and all such annuities to be deemed personal estate.

36. In cases of deferred or reversionary annuities, if the annual payments are not kept up, all right to such annuity to be forfeited.

37. Every transfer of right to a deferred annuity, purchased by annual payment, to be registered in such form as the commissioners shall direct; and to be transferred entire, and without change of nominee, and in case of devise, the will to be entered in commissioners' books.

38. Registers, transfers, receipts, &c. under this act, to be exempt from stamp duty.

39. The Bank are required to make up to the 5th January, in each year, an account of all annuities of whatsoever kind, which shall have remained unclaimed for three years, and all annuities so remaining, and all arrears thereof, are to cease to be chargeable on the Consolidated Fund; this not to prejudice the right of any person entitled to such annuity; the commissioners to reinstate such annuities, upon the production of proper certificates, &c., and to charge the same, and all arrears thereof, upon the Consolidated Fund.

40. If any certificate, affidavit, &c. be produced, containing an untrue statement of the age of any person proposed as nominee, in every such case all money, &c., which may have been paid for the purchase to be forfeited, together with all title to any such purchased or transferred annuity; and treble the amount of any sum which may have been received on account of such annuity; and also the further sum of 500*l.*

41. Any person guilty of forging, or knowingly uttering any forged register, certificate, transfer, &c., or of deceitfully personating any real nominee, to be deemed guilty of felony, and punishable by death.

42. Any person receiving payments in respect of annuity after the death of the nominee, knowing such nominee to be dead, to forfeit treble the amount of all money so received, and the further sum of 500*l.*

43. All pecuniary penalties to be recovered in the Courts of Exchequer, and go to and become part of the Consolidated Fund; the commissioners to have power to grant such reward as they shall think fit, not exceeding one moiety of such penalty, after deducting all charges, to any person who shall appear to them entitled thereto, as an informer, in respect of such penalty so recovered.

44. Any person wilfully or corruptly swearing or affirming anything false or untrue, under the provisions of this act, to be liable to the penalties of wilful and corrupt perjury.

45. Certificates and other instruments to be in the form directed by the commissioners; evidence respecting the purchase or receipt of any annuity to be admitted in certain cases, though not strictly conformable to this act; and errors in contracts, &c. to be amended.

46. No fee to be taken by any officer, acting under the commissioners, for any certificate, &c. under this act.

47. Commisssioners to appoint such clerks, &c. as may be necessary for carrying this act into execution; to be approved of by the Treasury.

48. The Lords Commissioners of the Treasury to direct such sums of money to be paid out of the fund upon which the establishment of the Commissioners for the Reduction of the National Debt is chargeable, for the payment of the salaries to officers and clerks employed under this act,

and such expenses as shall attend the execution thereof, as the said Lords Commissioners shall think fit; and also to appoint such allowance as they shall think proper for the officers of the Bank of England, for their services in the execution of this act, to be at the disposal of the governor and company.

49. Three commissioners to be a quorum.

50. An account to be annually laid before Parliament of annuities transferred, and of money paid for annuities, and of annuities granted.

51. Any action or suit brought against any person for anything done, in pursuance of this act, to be commenced within three months after the fact committed, and the defendant in every such suit may plead the general issue, and give this act and the special matters in evidence in any trial; and if the jury find for the defendant, or if the plaintiff be nonsuited or discontinue his action, or if upon demurrer judgment be given against the plaintiff, the defendant to have treble costs, and the like remedy that any defendant hath in other cases to recover costs by law.

GREENWICH HOSPITAL.

[10 Geo. IV. c. 25 and 26.—Passed 22d May and 1st June, 1829.]

These acts are to provide for the better management of the affairs of Greenwich Hospital, transferring it from the present to other commissioners; viz., the Treasurer of the Navy and first Commissioner of Woods and Forests, &c., and vesting the general controul over the Hospital in the Admiralty; and to transfer the management of Greenwich out-pensions, and certain duties in matters of prize, to the Treasurer of the Navy.

SINKING FUND.

[10 Geo. IV. c. 27.—Passed 1st June, 1829.]

An Act to amend the several Acts for regulating the reduction of the National Debt.

1. Whereas it has been resolved by the House of Commons, that, in lieu of the sum of 3,000,000*l.* directed by the act of 9th Geo. IV., c. 90, to be issued towards the reduction of the national debt, there shall be issued, from the 5th July, 1829, out of the Consolidated Fund, such annual sum as shall appear to be the actual surplus revenue of the United Kingdom, to be applied towards the reduction of the national debt by the Commissioners for that purpose; it is enacted, that the Lords Commissioners of the Treasury shall, every quarter, make up accounts of the annual revenue for the four preceding quarters, and one-fourth of the annual surplus is to be issued to the Commissioners for the Reduction of the National Debt, who are to publish in the "London Gazette" the sum which will be so applicable in the ensuing quarter.

2. Sums paid into the Exchequer, under the act 4th Geo. IV., c. 32, "to confirm an agreement entered into by the trustees under an act of the last session of Parliament, for apportioning the burden occasioned by the military and naval pensions and civil superannuations, with the Governor and Company of the Bank of England," shall not be taken as part of the revenue, nor be included in the first annual account prepared under this act.

3. One-fourth part of the surplus revenue of the preceding year to be issued for the reduction of the national debt for the quarter then next ensuing.

4. All stock and annuities for years standing in the names of the Commissioners for the Reduction of the National Debt on the 5th July, 1829, to be cancelled, and the dividends cease to be issued out of the Consolidated Fund.

5. And all stock, &c., transferred after the 5th July, 1829, to be cancelled from the day of transfer.

6. Commissioners empowered to purchase Exchequer bills, or to advance money on deficiency bills, under 57th Geo. III., c. 48.

7. All Exchequer bills so purchased to be cancelled within seven days after each quarter.

8. Commissioners to apply all sums issued to them in reduction of the national debt; and the powers of former acts extended to this, except so far as the same are repealed by it.

MILITIA.

[10 Geo. IV. c. 29.—Passed 1st June, 1829.]

This is an act to defray the charge of the pay, clothing, and contingent and other expenses of the Disembodied Militia in Great Britain and Ireland; and to grant allowances in certain cases to subaltern officers, adjutants, paymasters, quartermasters, surgeons, assistant-surgeons, surgeons'-mates, and serjeant-majors, until the 25th of March, 1830. This act makes a considerable reduction both in the number and expense of the Militia of the United Kingdom.

YEOMANRY CORPS (Ireland).

[10 Geo. IV. c. 30.—Passed 1st June, 1829.]

This is an act to continue and amend the laws relating to Yeomanry Corps in Ireland, continuing the previous acts of 43 and 56 Geo. III., and 4 Geo. IV., for five years from the passing hereof, and empowering the Lord Lieutenant to dismiss any officer of such corps.

COMMISSIONERS OF EXCISE.

[10 Geo. IV. c. 32.—Passed 4th June, 1829.]

By this act one or more of the Commissioners of Excise are enabled to act for the despatch of business for Scotland and Ireland respectively.

IRISH FISHERIES.

[10 Geo. IV. c. 33.—Passed 4th June, 1829.]

This is an act to amend the several acts for the encouragement of the Irish Fisheries.

OFFENCES AGAINST THE PERSON (Ireland).

[10 Geo. IV. c. 34.—Passed 4th June, 1829.]

This is an act to consolidate and amend the statutes in Ireland relating to offences against the person, and is in substance the same as c. 31 of the last session of Parliament, given in the Companion for 1829, p. 149, *et seq.*

ARRESTS UPON MESNE PROCESS (Ireland).

[10 Geo. IV. c. 35.—Passed 4th June, 1829.]

An Act to prevent Arrests upon Mesne Process where the debt or cause of action is under 20l., and to regulate the practice of Arrests in Ireland.

1. After reciting the existing acts, which it is declared to be expedient to extend and render more effectual, it is enacted that no person be held to bail in Ireland where the cause of action does not amount to 20*l.*, exclusive of any costs or charges that may have been incurred in suing for the same.

2. Defendant, discharged from arrest upon making deposit with the sheriff, pursuant to 43 Geo. III. c. 46., may, instead of perfecting special bail, allow the deposit to be paid into court; or if he remains in custody, or gives bail to the sheriff, he may pay the debt into court, with 20*l.* to answer costs, and file common bail.

3. Defendant may receive such deposit and payment out of Court, upon perfecting special bail.

4. Defendant who has perfected special bail, may lodge such sum in Court, and obtain execution on the bail piece.

5. So much of any acts as authorize arrests where the cause of action amounts to less than 20*l.*, repealed.

INSOLVENT DEBTORS (Ireland).

[10 Geo. IV. c. 36.—Passed 4th June, 1829.]

This act continues until the end of the next session the acts for the relief of Insolvent Debtors in Ireland; and provides that between Trinity Term and the 1st of November yearly, the Court may appoint its sittings at such times as shall appear necessary; not to adjourn for more than two months at one time.

CORONERS (Ireland).

[10 Geo. IV. c. 37.—Passed 4th June, 1829.]

An Act to amend the Laws relating to Coroners in Ireland.

1. Recites, that whereas by the 6th Anne, c. 7., it was enacted that Coroners might execute writs upon mesne process, and accept bail for persons taken by them on such process, in like manner and with such fees as the sheriff might have done, when the sheriff had returned that they could not be found or had no goods; and whereas these provisions were repealed by the 3 Geo. IV. c. 115, which repeal has been found of mischievous consequence; it is enacted that so much of the said 3 Geo. IV. c. 115, is hereby repealed, and the said provision of the 6th Anne, c. 7, revived and re-enacted.

2. No person to vote at election for Coroners, unless qualified to vote for knights of the shire.

3. Coroners empowered to remunerate medical witnesses attending inquests pursuant to summons, to any amount not exceeding 5*l.*, by an order to be paid by the treasurer of the county or city where such inquests are held.

4. Time of election limited to ten days from the delivery of the writ.

PUNISHMENT OF ATTEMPTS TO MURDER (Scotland).

[10 Geo. IV. c. 38.—Passed 4th June, 1829.]

An Act for the more effectual punishment of Attempts to Murder in certain cases in Scotland.

1. Whereas the act 6 Geo. IV. c. 126., "for the prevention in Scotland of malicious shooting, stabbing, &c.," did not extend to the punishment of attempts to murder by means of suffocation, strangulation, and drowning, and it is expedient that suitable punishment should attach thereto, and the provisions be all included in one act, the said 6 Geo. IV. c. 126. is hereby repealed, except as to offences committed before the passing of this act.

2. Persons wilfully and maliciously shooting, or attempting to shoot, stab, poison, suffocate, strangle, or drown, with intent to murder or disable, or do some other grievous bodily harm to any of his Majesty's subjects, being convicted thereof, actor or art and part, to be held guilty of a capital crime, and to receive sentence of death accordingly.

3. Maliciously throwing sulphuric acid, or other corrosive substance, intending to murder, disfigure, or do some bodily harm, whereby any one shall be maimed, disfigured, &c., to be deemed a capital crime, and punishable with death.

4. If death ensued, and the act would not have amounted to murder, not to be considered a capital offence.

5. Not to affect or impair the power of the prosecutor to restrict the pains of law.

SUGAR DUTIES.

[10 Geo. IV. c. 39.—Passed 19th June, 1829.]

This act continues certain duties on sugar imported into the United Kingdom, until 5th July, 1830.

ROADS AND BRIDGES (Ireland).

[10 Geo. IV. c. 40.—Passed 19th June, 1829.]

This is an act continuing for one year the 6 Geo. IV. c. 101, for repairing, maintaining, and keeping in repair certain roads and bridges in Ireland.

BUTTER TRADE (Ireland).

[10 Geo. IV. c. 41.—Passed 19th June, 1829.]

An Act to amend the Laws for the regulation of the Butter Trade in Ireland.

1. After reciting the various acts in force concerning the butter trade, it is enacted, that in future no person be compellable to have empty casks branded, nor to bring casks of butter to be weighed, tasted, &c. before they are exposed for sale, or export.

2. Not to extend to abolish the offices of weighmaster, taster, &c., or to prevent any person from requiring such weighmaster, or taster, to weigh, taste, mark, and brand such casks, according to the provisions of former acts.

3. Annual compensation to be made by the Treasury to weighmasters, &c. who may sustain loss in the amount of their fees in consequence of this act, except in certain cases.

4. 5. Every person applying for compensation to state the rate of fees received, and for what purpose, and under what authority, and any other matter the Treasury may desire to know, and to transmit to them an account of all legal fees received during the year ending December 31st then next preceding; and if the gross amount of such fees be less, in consequence of the provisions of this act, than the average amount of three years preceding January 1, 1829, a sum equal to the amount of the deficiency to be paid out of the Consolidated Fund.

6. An account of all such compensations to be laid before Parliament annually.

CHARITABLE LOAN SOCIETIES (Ireland).

[10 Geo. IV. c. 42.—Passed 19th June, 1829.]

This is an act to amend the act of 4 Geo. IV. c. 32, for the amendment of the laws respecting Charitable Loan Societies in Ireland, and vests securities of a removed or deceased treasurer in his successor, who is empowered to sue on the same.

CUSTOMS DUTIES.

[10 Geo. IV. c. 43.—Passed 19th June, 1829.]

This is an act to amend and extend the operation of the laws relating to the Customs, and to alter and regulate the duties upon certain articles.

METROPOLIS POLICE.

[10 Geo. IV. c. 44.—Passed 19th June, 1829.]

An Act for Improving the Police in and near the Metropolis.

1. After reciting that offences against property have lately increased, and the local establishments of nightly watch and police have been found inadequate, it is enacted that a new police-office be established in Westminster, and two fit persons appointed as justices of the peace of the counties of Middlesex, Surrey, Hertford, Essex, and Kent, and of all liberties therein, to conduct the business of the said office under the directions of a Secretary of State; such justice not required to possess

the qualification of estate demanded in other cases, nor allowed to act at any court of general or quarter session, except for the purposes of this act.

2. 3. Every justice so appointed to take an oath in a form prescribed, previous to executing any of the duties of such office, and to have an annual salary, not exceeding 800*l.*

4. The whole of the city and liberties of Westminster, and such parishes, townships, &c. in Middlesex, Surrey, and Kent, as are enumerated in this act, to constitute one district, to be called "The Metropolitan Police District;" and a sufficient number of able men, under the direction of a Secretary of State, to be appointed as a police force for the whole of such district, to be sworn in by one of the said justices to act as constables, not only within the said district, but also within the counties of Middlesex, Surrey, Hertford, Essex, and Kent, and all liberties therein.

5. The said justices are empowered to make regulations for the management of the police force, subject to the approbation of the Secretary of State, and to suspend or dismiss any man belonging to the police whom they shall think negligent in his duty, or otherwise unfit.

6. Any publican, or keeper of a house, room, &c. for the sale of any liquors, knowingly harbouring any policeman during the hours of duty, to forfeit, on conviction before two justices, a sum not exceeding 5*l.*

7. Any policeman is empowered, while on duty, to apprehend all loose, idle, and disorderly persons whom he shall find disturbing the public peace, or whom he shall have cause to suspect of any evil design, or shall find lying between sunset and 8 A. M. in any highway, yard, or other place, or loitering therein, and not giving a satisfactory account of themselves; and to deliver any person so apprehended into the custody of the constable, under this act, who shall be in attendance at the nearest watch-house, in order to his being brought before a justice of the peace to be dealt with according to law; the constable, if he deem it prudent, to be allowed to take bail of such person for his appearance.

8. Any person assaulting or resisting, or aiding or inciting others to assault or resist, any policeman in the execution of his duty, to forfeit, on conviction, a sum not exceeding 5*l.*

9. Constables attending at the watch-houses in the night, may take bail by recognizance, from persons brought before them for petty misdemeanors, without any fee or reward; such recognizance to be conditioned for the appearance of the parties before a magistrate, and in default of appearance at the time and place required, or within one hour afterward, such recognizance to be forfeited; but if the party not appearing shall apply, by any person in his behalf, to postpone the hearing of the charge against him, the justice to be at liberty to enlarge the recognizance to such further time as he shall appoint; and when the matter is determined, either by dismissal, or by binding over to the sessions, or otherwise, the recognizance to be discharged without fee or reward.

10. 11. 12. Appoints a receiver of all monies applicable to the purposes of this act, and defines his duties:—he is to give security; to keep an exact account of all monies, &c. by him received, and immediately to pay the same into the Bank of England; to draw out such sums as may be necessary for the payment of salaries, wages, and allowances, and other charges and expenses—every draft, or order for money, being countersigned by one of the justices; and once in every six months, to make out and sign a particular account of all monies received and paid by him, and for what purposes, which is to be audited: and he is to be allowed a salary not exceeding 700*l.* per annum, and to pay any extraordinary expenses incurred in apprehending offenders, or executing the orders of either of the justices, such expenses being first approved by them; and also any reward which the Secretary of State may direct to be paid for extraordinary diligence, or as a compensation for wounds or severe injuries received in the performance of duty, or as an allowance to such as shall

be disabled or worn out by length of service; and also all other charges and expenses directed to be paid by such principal Secretary of State.

14. 15. Upon his removal, his successor may sue him for his balance, and, upon his death, his representative.

16. The receiver is to make all such contracts and disbursements as shall be necessary for purchasing or renting any lands or buildings, or for erecting, furnishing, or repairing any buildings for the purposes of this act, under the direction of one of the principal Secretaries of State; and the property in all lands, &c. so purchased or rented, and all goods and chattels so purchased, and all watch-houses, watch-boxes, arms, accoutrements, &c. to be given up as hereinafter mentioned, is to be vested in him; and he may, under the directions of a principal Secretary of State, dispose of the whole or any part of such property.

17. Corporations, trustees for public purposes, and others, are empowered to sell lands, &c., or to grant leases to the receiver, and in case of disagreement, &c., the value to be assessed by a jury.

18. No justice or receiver to be capable of sitting as a member of the House of Commons, and no justice, receiver, or policeman, while in such office, or within six months after having quitted the same, to be capable of voting for the election of a member for any county or place within the metropolitan police districts, nor to persuade or dissuade any elector in his choice of a member; and any justice, receiver, or policeman offending herein, to forfeit 100*l.*, to be recovered by any person who will sue for the same within six months after the commission of the offence; one moiety to be paid to the informer, and the other moiety to the receiver to be added to the funds for the purposes of this act.

19. The present watch in each parish, township, &c. in the metropolitan district, to continue until it be notified by the justices to such parish, &c. that the new police is appointed; and upon the day so named, the night-watch for such parish, &c., and all powers for assessing and levying any watch-rate therein, to cease; and all watch-houses, watch-boxes, arms, accoutrements, &c. to be given up for the use of the new police; and any person, having the charge and control of any watch-house, &c. refusing to give up the same, on conviction thereof, before two justices, to forfeit any sum not exceeding 5*l.*, at their discretion; and where part of any building has been used as a watch-house, such part to be given up every day, from four in the afternoon till nine in the morning, under the like penalties.

20. Any watch-rate already imposed to be collected as if this act had not passed; and nothing herein contained to affect any rate other than the night-watch-rate.

21. Where monies have been borrowed and debts contracted for building watch-houses, and other expenses connected with the night-watch, &c., the same to continue chargeable upon such rates out of which they have been heretofore in part paid, and rates to be assessed for the payment of such debts until the same be discharged.

22. The justices, subject to the Secretary of State's direction, may order watch-boxes to be placed in such places within the district as they shall deem most convenient.

23. 24. When the police, under this act, take charge of any parish or place within the district, the justices may forthwith issue a warrant to the overseers of the poor of such parish, &c., (who, within the meaning of this act, are any persons authorised to make and collect the poor-rate,) commanding them, out of the money collected for the poor, to pay over the amount mentioned in the warrant within forty days from the delivery thereof, such sum not to exceed in any one year the rate of eightpence in the pound on the fair annual value of all property rateable to the relief of the poor in such parish, &c., to be computed according to the last valuation for the county-rate.

25. The overseers, to whom such warrant shall be issued, to pay the amount mentioned therein out of any money in their hands collected for

the poor-rate, and if there be no such money in their hands, or an insufficient sum, to levy the amount required as a part of the poor-rate, and proceed in the same manner as for that rate.

26. Overseers, in case of non-payment of the police-rate, to be distrained upon; and in case the goods of all of them are not sufficient to pay the same, the arrears to be added to the amount of the next levy directed to be made in such parish, &c., and in case of default or neglect, or in any other case in which one of the principal Secretaries of State shall so direct, two or more persons may be appointed by the said justices to act as overseers of the poor within such parish, &c. for levying money for the purposes of the police under this act.

27. In property occupied by ambassadors, &c., or by any other person not liable by law to the payment of the poor-rate, the landlord to pay the police-rate.

28. Any justice hereby appointed, or any person having an order from such justice, to be allowed to inspect any county-rates for any county, any part of which is within the metropolitan police district, and also any returns concerning any parish, &c., and to take copies or extracts therefrom without payment of any fee; and any person having the custody of such rate or return, refusing to permit such copies or extracts to be taken, within two days after such order has been produced, on conviction, to forfeit any sum not exceeding 10*l*.

29. An account of all monies received and expended, made up to the 31st December in each year, to be annually laid before Parliament, to specify the total sum charged upon and received from every parish, &c., the rate in the pound, and the total annual value of the entire property; and also the different heads of expenditure for the police, and the amount actually expended under each.

30. In those precincts and places in which no poor-rate is made, or in which the property is not deemed rateable thereto, the justices, under this act, are to appoint an assessor for the purpose of assessing the fair annual value of such property, and rating the same to a police-rate not to exceed in any one year eight-pence in the pound; and such assessor shall, within forty days after his appointment, return to the justices an assessment of such precinct, &c. specifying the names of the inhabitants or occupiers of all messuages, lands, &c., the fair annual value of the same, the amount of police-rate charged thereon, and, where the premises are unoccupied, the fair value thereof when let; such assessor to be remunerated as one of the principal Secretaries of State shall direct, to be paid out of the police-rate collected after such assessment.

31. When an assessment is made, public notice thereof to be given, and all persons included in the assessment to have liberty to inspect and make extracts from it, without payment of any fee; and if the person having custody of such assessment refuse to permit such inspection, &c., he shall forfeit, on conviction, any sum not exceeding 5*l*.

32. The justices to nominate one or more persons to collect the police-rate charged in such assessment, with the same powers as overseers of the poor.

33. Any person, after having paid the rate charged upon him, may appeal to the next court of general or quarter sessions, giving notice in writing to the receiver of such appeal, and of the cause and matter thereof, ten clear days before such sessions, and entering into recognizance to try such appeal at the said sessions, abide the order of the court thereon, and pay such costs as shall be by the court awarded; and if such appeal be on the ground that any person is omitted in such assessment, or assessed below the fair annual value, the like notice and recognizance to be given and entered into to such person, who is to be heard on such appeal if he desire it; the justices at such sessions as aforesaid to hear and determine in a summary way, and make such order, with or without costs, as they may deem proper; and the assessment may be altered to relieve the appellant without altering any other part of it.

34. 35. An Order in Council may hereafter direct any parish, &c., of which any part may be within twelve miles of Charing-cross, and in the counties before-mentioned, to be added to the police district, and they are, when so added, to be subject to this act; and no misnomer or inaccurate description of any parish, &c. in such order, or the schedule hereto, if designated to common intent, is to affect the execution of this act.

36. Any person charged, on oath before a justice of the peace, with any offence punishable on summary conviction under this act, to be summoned to appear before two justices at a time and place named; and such person not appearing, the justices may hear and determine the case *ex parte*, or issue a warrant for his apprehension; such prosecution to be commenced within three months after the commission of the offence.

37. All monies adjudged to be paid for any offence, to be paid to the receiver, and by him added to the funds for the purposes of this act; and persons not to be precluded from giving evidence, or acting as justices, by reason of paying police-rate.

38. Justices may order any penalty to be paid either immediately, or within such period as they may think fit; and in default of payment may commit such defaulter to gaol, or the house of correction, for any term not exceeding two months, for sums not exceeding 5*l.*; four months for sums not exceeding 10*l.*; and six months in any other case; imprisonment to cease on payment of the sum due.

39. Gives form of conviction.

40. No conviction, order, warrant, &c. to be quashed for want of form, or be removed by *certiorari*, or otherwise, into any of the Courts of Record at Westminster: no warrant of commitment to be held void by reason of any informality, provided the conviction be good and valid, and be alleged therein; and where any distress is made, the same not to be deemed unlawful, nor the party making it a trespasser, on account of any defect in the form of the summons, conviction, warrant, or other proceedings, and the party distraining not to be deemed a trespasser, *ab initio*, on account of any irregularity afterwards committed by him, but the person aggrieved by such irregularity to recover satisfaction for the special damage, if any, by an action on the case.

41. All actions and prosecutions to be laid and tried in the county where, and to be commenced within six months from the time when, the fact was committed; notice of such action, and the cause thereof, to be given one month, at least, before its commencement, and the defendant to be allowed to plead the general issue, and give this act and the special matter in evidence on any trial had thereon; no plaintiff to recover if tender of sufficient amends have been made before, or a sufficient sum of money paid into Court after action brought; and if a verdict pass for the defendant, or the plaintiff become nonsuited, or discontinue such action, or if judgment be given against him, defendant to recover his full costs as between attorney and client, and though the plaintiff have a verdict, not to have costs against the defendant unless the judge certify his approbation of the verdict.

42. Nothing in this act to affect the 3rd Geo. IV. c. 55, intituled "An act for the more effectual administration of the office of justice of the peace in and near the metropolis, and for the more effectual prevention of depredations on the Thames and its vicinity, for seven years;" or of the act 6th Geo. IV., c. 21, intituled "An act to amend the above."

List of the Parishes, Townships, Precincts, and Places referred to by the Act as constituting the Metropolitan Police District.

MIDDLESEX.

City and Liberties of Westminster.

The parishes of St. Margaret and St. John, St. Martin-in-the-Fields, St. George, Hanover-square, St. James, St. Mary-le-Strand, including the

Duchy Liberty, St. Clement Danes, including the Duchy Liberty, St. Paul, Covent-garden, and St. Ann in the Liberties of Westminster; Whitehall Gardens, Whitehall, and Richmond-terrace, whether the same be parochial or extra parochial; and the close of the Collegiate Church of St. Peter.

Holborn Division.

The parishes of St. Giles-in-the-Fields and St. George, Bloomsbury, St. Andrew, Holborn, and St. George the Martyr, St. Pancras, St. John, Hampstead, St. Mary-le-bone, and Paddington; the Liberties of Saffron-hill, Hatton-garden and Ely Rents, and of the Rolls; and the Precinct of the Savoy.

Finsbury Division.

The Parishes of St. Luke, St. Sepulchre, St. James, Clerkenwell, including both districts of St. James and St. John, St. Mary, Islington, and St. Mary, Stoke Newington; the Liberty of Glasshouse-yard; and the Charter House.

Tower Division.

The Parishes of St. Mary, Whitechapel, Christchurch, St. Leonard, Shoreditch, St. John, Hackney, St. Matthew, Bethnal-green, St. Mary, Stratford Bow, Bromley St. Leonard, All Saints, Poplar, St. Ann, Limehouse, St. Paul, Shadwell, St. George in the East, and St. John, Wapping; the Liberties of Norton Falgate and East Smithfield; the Hamlets of Mile End (Old and New Towns) and Ratcliffe; the Precinct of St. Catherine; and the Liberty of the Tower of London, consisting of the Liberty of the Old Artillery Ground, the Parish of Trinity, Minories, the Old Tower Precinct, the Precinct of the Tower Within, and the Precinct of Wellclose.

Kensington Division.

The Parishes of Kensington, St. Luke, Chelsea, Fulham, Chiswick, Ealing, and Acton; and the Hamlet of Hammersmith.

Brentford Division.

The Township of New Brentford.

Extra Parochial Places.

Lincoln's-inn, Gray's-inn, Staple's-inn, that part of Furnival's-inn in the County of Middlesex, and Ely-place.

Kent.

The Parishes of St. Paul and St. Nicholas, Deptford, and of Greenwich.

Surrey.

The Parishes of Barnes, Battersea, Bermondsey, Camberwell, Clapham, Lambeth, Newington, Putney, Rotherhithe, Streatham, Tooting, Wandsworth, and Christchurch; the Hamlets of Penge, and of Hatcham, Deptford; and the Clink Liberty.

Borough of Southwark.

The Parishes of St. George, St. Saviour, St. John, St. Olave, and St. Thomas.

POLICE MAGISTRATES.

(10 Geo. IV., c. 45.—Passed 19th June, 1829.]

This act continues the act 3rd Geo. IV., c. 55, as amended by the 6th Geo. IV., c. 21, "for the more effectual administration of the office of a justice of the peace in and near the metropolis," until the 5th July, 1832; empowers the Secretary of State to direct the horse and foot patrol to be placed under the new police office when established; and gives all penalties adjudged to be paid to any person, unless the informer or party aggrieved, to the Receiver.

DIVISIONS OF COUNTIES (England and Wales).

[10 Geo. IV., c. 46.—Passed 19th June, 1829.]

This is an act for more effectually executing an act of last session for the better regulation of Divisions in the several Counties of England and Wales, by empowering the quarter sessions to make certain provisions for high constables where inconvenience to them may arise from any division.

ARMS (Ireland.)

[10 Geo. IV., c. 47.—Passed 19th June, 1829.]

This act continues for one year, and amends, two acts, of the 47th Geo. III., sess. 2, c. 54, and 50th Geo. III., c. 109, "for the preventing improper persons from having arms in Ireland;" the Lord Lieutenant empowered to remit or mitigate any penalties under them.

CLERK OF THE PLEAS (Ireland.)

[10 Geo. IV., c. 48.—Passed 19th June, 1829.]

This is an act to authorize the sale and transfer of the Stocks or Funds standing in the books of the Bank of Ireland, on account of the office of the Clerk of the Pleas in the Court of Exchequer, in Ireland, and the payment and application of the produce of such stocks or funds to the Consolidated Fund of the United Kingdom.

WAREHOUSED SUGAR.

[10 Geo. IV., c. 49.—Passed 19th June, 1829.]

This act continues until the 5th July, 1830, the act 9th Geo. IV., c. 93, allowing sugar to be delivered out of warehouse to be refined.

CROWN LAND REVENUE.

[10 Geo. IV. c. 50.—Passed 19th June, 1829.]

This is an act to consolidate and amend the laws relating to the management of his Majesty's Woods, Forests, Parks, and Chases; of the Land Revenue of the Crown within the survey of the Exchequer in England; and of the Land Revenue of the Crown in Ireland; and for extending certain provisions, relating to the same, to the Isles of Man and Alderney.

COTTON FACTORIES' REGULATION.

[10 Geo. IV. c. 51.—Passed 19th June, 1829.]

This act is to amend the law 6 Geo. IV. c. 63, relating to the employment of Children in Cotton Mills and Factories, and provides that, in informations, &c. under that act, it shall not be necessary to insert the names of all the partners, but only of the ostensible proprietor; that service of summons upon any principal manager, during working hours, shall be good service; and that no information, &c., be quashed for informality.

SILK MANUFACTORIES.

[10 Geo. IV. c. 52.—Passed 19th June, 1829.]

This act extends the powers of an act 4 Geo. IV. c. 34, "for enlarging the powers of Justices in determining complaints between Masters and Servants," to persons engaged in the Manufacture of Silk.

ECCLESIASTICAL COURTS.

[10 Geo. IV. c. 53.—Passed 19th June, 1829.]

This is an act to regulate the Duties, Salaries, and Emoluments of the Officers, Clerks, and Ministers of certain Ecclesiastical Courts in England.

GAOLS (Scotland).

[10 Geo. IV. c. 54.—Passed 19th June, 1829.]

This is an act for directing Reports to be made respecting Gaols in Scotland.

SMALL DEBTS (Scotland).

[10 Geo. IV. c. 55.—Passed 19th June, 1829.]

This act is for the more effectual recovery of Small Debts, and for diminishing the expenses of litigation in causes of small amount, in the Sheriff Courts, in Scotland; repealing the 6 Geo. IV., c. 24, for the purpose of extending its provisions, and rendering them more effectual.

FRIENDLY SOCIETIES.

[10 Geo. IV. c. 56.—Passed 19th June, 1829.]

An Act to Consolidate and Amend the Laws relating to Friendly Societies.

1. Recites all former acts concerning Friendly Societies, which are hereby repealed, except as hereinafter excepted.

2. Any number of persons are empowered to form themselves into a society for their mutual relief, to raise funds for that purpose, to make, alter, and amend rules for the government and guidance of the same, and to inflict fines, &c. upon members who shall offend against such rules.

3. Such societies in their rules, before they be confirmed by the justices as hereafter directed, to declare all and every the intents and purposes for which such society is intended to be established; and to direct all the uses and purposes to which the money subscribed shall be applied, and in what proportions, and under what circumstances, any member or other person shall become entitled thereto; the money so subscribed not to be diverted or misapplied by the treasurer or other person entrusted therewith, under such penalty as the society shall, by any rule, impose.

4. A transcript of all such rules, signed by three members, and countersigned by the secretary, to be submitted with all convenient speed, after every making, altering, or amending thereof, to the Barrister-at-law appointed to certify the rules of Savings Banks, in England and Wales, to the Lord Advocate, or any of his deputies in Scotland, and to such barristers as may be appointed by the Attorney-General, in Ireland, for the purpose of ascertaining whether the said rules are in conformity to law, and the provisions of this act; the said barrister, &c. to give a certificate thereof, or point out in what parts they are repugnant thereto; the fee for which, not to exceed one guinea, together with the expense of conveying the said rules to and from the said barrister, &c., to be defrayed by the society; the transcript, when certified by the said barrister, &c., to be deposited with the clerk of the peace, and by him laid before the justices at the next general quarter-sessions, who are authorised and required to confirm the same; such transcript to be enrolled by the clerk of the peace, and a certificate thereof to be signed by him, on a duplicate copy to be provided by and returned to the society. Rules, &c., being copies of those of any other society, previously enrolled in the same county, not required to be submitted to the barrister, &c., if accompanied with an affidavit to that effect when deposited with the clerk of the peace.

5. In case any barrister, &c. refuse to certify all or any of the rules submitted to him, the society may submit the same to the quarter-sessions, together with the reasons assigned by such barrister in writing for such rejection or disapproval, and the justices may confirm the same, if they think fit, notwithstanding such rejection or disapproval.

6. No rules to be allowed, unless it shall appear to the justices that the tables tendered may be adopted with safety to all parties concerned.

7. 8. No society to have the benefit of this act, unless their rules, &c. are entered in a book, kept by an officer appointed for that purpose, and a transcript thereof deposited with the clerk of the peace; and all rules, when entered and confirmed as aforesaid, to be binding on members and contributors, and their representatives; and the entry of such rules in such book, or the transcript deposited with such clerk of the peace, or a true copy of such transcript, to be received as evidence of such rules in all cases.

9. No confirmed rule to be altered, &c. but at a general meeting of the society, convened in pursuance of a requisition for that purpose by seven or more members; such requisition and a notice of the meeting to be publicly read at the two meetings next before such general meeting, unless a committee have been appointed for that purpose at a general meeting convened in such manner, in which case such committee to have the like power to make alterations, &c.; such alterations, &c., to be made with the approbation of three-fourths of the members present, or by a like proportion of the committee.

10. The rules to specify the place of meeting, and the duty of the officers and members at large; the place of meeting may be altered when necessary, notice thereof being given to the clerk of the peace within seven days before or after such removal, provided such place be within the county in which the rules of the society are enrolled.

11. Such societies, at their usual meetings, or by their committee, may appoint a steward, president, warden, treasurer, or trustee, or such other officers as may be necessary to carry into execution the purposes of such society, for such periods and purposes as shall be established by the rules; every officer in any way connected with the receipt, management, or expenditure of the society's funds, to give security by a bond, in a form prescribed, for the faithful execution of such trust, to be given to the clerk of the peace without any fee; and in case of forfeiture, the clerk of the peace to sue upon such bond for the use of the society, being indemnified from all costs and charges respecting such suit.

12. Such societies may elect a committee of any number of members, and may delegate to such committee any powers given by this act, being first declared in and by the rules, confirmed by the justices and filed, in the manner before directed; and when a committee shall be appointed for any particular purpose, the power delegated to be entered in a book by the secretary; their transactions to be entered in a book, and to be at all times subject to the review and control of the society, in such manner as their rules shall direct.

13. The treasurer or trustee to lay out such sums of money as are not needed for immediate expenditure, either in real or heritable securities, or heritable property, or invest the same in the public funds or government securities; all interest and proceeds to be brought to account by such treasurer, &c., and to be applied to the use of the society.

14. All persons entrusted with the disposal, management, or custody of the funds of the society, to render an account, and pay over all monies remaining in their hands, and transfer and deliver over all securities, books, and papers in their custody, on demand being made, or notice in writing given at their usual place of residence, to such person as the society shall appoint; and in case of neglect or refusal, application to be made to the Court of Exchequer in England or Ireland, the Court of Session in Scotland, or the Courts of Great Sessions in Wales, who shall proceed thereupon in a summary way, and make such order as may seem just, such order to be final and conclusive; and all transfers, sales, &c., made in pursuance of such order, to be good and effectual.

15. Where the trustees, &c., are out of the jurisdiction of the courts, or idiot, &c., or it be uncertain whether they are alive, or they refuse to convey, &c., the courts are empowered to appoint a person to convey.

16. When all the trustees are absent, &c., the courts may order stock to be transferred and dividends paid, to such persons as the society shall

appoint; and where any trustee remains, he or they to be empowered to transfer such stock, &c., as aforesaid.

17. Upon the presenting of any petition, the judges of the said courts may assign counsel, and appoint a clerk or practitioner of such court to carry on such petition without fee or reward.

19. This act to be a complete indemnity and discharge to the Bank of England and their officers, for all acts, &c., done pursuant thereto.

20. The executors, administrators, or assignees, &c., of any person in whose custody were any monies, effects, or securities of such society, shall, within forty days after demand made, deliver over all such effects, &c., and pay all sums of money due to the said society, before any other debts are paid or satisfied.

21. The effects of a society to be vested in the treasurer or trustees for the time being, who may bring and defend actions, &c., and no action to be discontinued or abated by the death or removal of such treasurer or trustee, but the same to be proceeded in by the succeeding treasurer or trustee in the proper name of the person commencing the same.

22. The treasurer or trustee, &c., not to be liable to make good any deficiency in the funds of the society, unless such persons have declared in writing their willingness to be so answerable, and may limit their responsibility to such sum as shall be specified in such writing; but all officers to be personally responsible for monies actually received by them.

23. Whenever the trustees of a society, after the decease of a member, have paid any sum of money to any person who shall appear to be entitled to the same, such payment to be valid and effectual with respect to any demand of any other person as next of kin, or lawful representative of such deceased member as against the society; but such next of kin or representative to have their remedy for such money against the person who may have received the same.

24. In case of any member dying intestate who may be entitled to any sum not exceeding 20*l*., the treasurer or trustees of the society are authorised to pay the same, according to the rules; and if there are no rules in that behalf, to pay and divide the same to the persons entitled to the effects of the deceased intestate, without letters of administration being taken out.

25. Any person who shall by false representation fraudulently obtain possession of the monies of the society, or fraudulently withhold the same, such offence not being provided for by the rules, to be summoned, upon complaint on oath by an officer of the society, before any two justices of the county, who are to hear and determine upon the same; and, upon due proof of such fraud, to convict the party, and award double the amount of the money so obtained or withheld to be paid to the treasurer, together with costs, not to exceed 10*s*.; in case of non-payment of money so awarded, the justices to cause the same to be levied by distress and sale, together with the costs attending such distress; and in default of such distress being found, to commit such person to gaol, to be kept to hard labour for any period not exceeding three months; not to prevent the society from proceeding by indictment against the party instead thereof.

26. The society not to be dissolved by any general meeting, or otherwise, without the consent of five-sixths in value of the members, to be ascertained as hereafter mentioned, and of all persons then receiving or entitled to receive relief from such society, to be testified under their hands; and, for the purpose of ascertaining the votes of such five-sixths, every member to be entitled to one vote, and an additional vote for every five years he has been a member, but not to have more than five votes; in all cases of dissolution the intended appropriation of the stock of the society to be distinctly stated in the proposed plan of dissolution prior to such consent being given; the society not to direct by any rule the division or distribution of such funds otherwise than to carry into effect the general purposes of such society; and all rules for the dissolution, &c., without

such consent as aforesaid, to be void; and in the event of such division or misappropriation, the trustee or other officer aiding or abetting therein, to be liable to the penalties before provided in cases of fraud.

27. Rules are to be made, specifying whether matters in dispute between the society and a member are to be referred to a justice of the peace or to arbitrators; if to the latter, they are to be elected at the first meeting of the society after the enrolment of its rules, none of them being interested in the funds of the society, and a certain number, not less than three, to be chosen by ballot in each case of dispute; and justices are empowered to enforce compliance with the decision of the arbitrators by the customary methods.

28. If the rules of the society direct such disputes to be decided by justices of the peace, any justice is empowered to summon the person against whom complaint is made, and any two justices may hear and determine the said complaint according to the rules; and in case any sum of money be awarded, the payment thereof to be enforced as before directed.

29. Every sentence, order, &c. of any justices under this act, to be final and conclusive.

30. The whole, or any part of the funds, of such society, may be subscribed into a Savings Bank, under 9 Geo. IV. c. 92.

31. Any sum, not less than 50*l.* may be paid directly into the Bank of England to the account of the Commissioners, for the Reduction of the National Debt, upon the declaration of the trustees, &c., that such monies belong exclusively to the society for which such payment is made; and in case such declaration be untrue, the money so paid to be forfeited to the commissioners; all the clauses of the 9 Geo. IV. c. 92, (an act to amend the laws relating to savings' banks,) with respect to the accounts and the regulation of receipts, orders, &c. to be applicable to the monies paid into the Bank of England under this act; provided, nevertheless, that societies enrolled under 59 Geo. III. c. 128, prior to 28th of July, 1828, shall, on paying money as aforesaid, receive receipts bearing interest at the rate of 3*d.* per cent. per diem.

32. Minors may become members of such societies, and have authority to act, and be legally responsible, provided such minor be admitted into such society with the consent of his parents or guardians.

33. The rules of every society to provide for the making of an annual statement of the funds to the members, to be attested by two auditors, and countersigned by the secretary; every member to receive a copy on payment of a sum not exceeding 6*d.*

34. 35. Every society established under this act, shall, within three months after the end of December, 1835, and so again within three months after the expiration of every further period of five years, transmit to the clerk of the peace a return of the rate of sickness and mortality within the said period of five years, according to a form prescribed; a copy whereof is to be annexed to the rules of each society; and the clerks of the peace, within one month after the end of March, 1836, and so again after every further period of five years, shall transmit to one of the Secretaries of State a list of the societies enrolled during such period under this act, specifying their names, the places where established, date of enrolment, and time of ceasing to exist, if such case should arise, and also a copy of the returns of sickness and mortality as before directed; such lists, &c. to be laid before Parliament.

37. All instruments or documents whatever, required to be given, issued, signed, or produced by this act, to be exempt from stamp duties.

38. The word "society," in this act, to be understood to include Friendly societies or institutions; the word "rules," to include orders and regulations, and so forth.

39. This act to extend to all friendly societies hereafter to be established, and also to societies already established, as soon as they shall think fit to conform to the provisions hereof.

40. Societies already enrolled not conforming to the provisions of this act within the space of three years, shall, after that period, cease to be entitled to the privileges of any of the herein-repealed acts; such acts to continue in force as to such societies for that time, unless they shall sooner conform to the provisions of this act.

CHARITIES' INQUIRY.

[10 Geo. IV. c. 57.—Passed 19th June, 1829.)

This act continues until the 1st of July, 1830, the powers of the commissioners for inquiring concerning Charities in England and Wales.

METROPOLIS ROADS.

[10 Geo. IV. c. 59.—Passed 19th June, 1829.]

An Act to amend an Act 7 Geo. IV. c. 142, for consolidating the Trusts of the several Turnpike Roads in the neighbourhood of the Metropolis, north of the River Thames, and to make and maintain new or branch Roads to communicate with the said Metropolis Roads.

1. The commissioners are empowered to make and maintain three several new or branch roads, viz. one from the Stamford-hill road, in the parish of Tottenham, Middlesex, nearly opposite to certain trees called the Seven Sisters, and terminating in the Camden-town-road, in the parish of Islington, Middlesex; another, a new road, or diversion of the old road, from and out of the said Stamford-hill-road, between the ninth and tenth mile-stone on the Enfield highway; and a third new road, or branch road, from the Lea-bridge-road, at or near the sixth mile-stone, across Epping Forest.

7. After the 1st January, 1830, the roads described in the fifth, eighth, and eleventh parts of the schedule of the 7 Geo. IV., c. 142, shall cease to be maintained, lighted, watched, &c. by the commissioners, with certain exceptions then recited.

18. After the 1st January, the several roads under the management of the commissioners, shall, for the purpose of collecting toll thereon, be divided into the following districts:—

The first, comprising that part of the Great Western, or Old Brentford Road, beginning at the west side of the great sewer, commonly called the Ranelagh sewer, at Knightsbridge, and continuing through the towns of Kensington, Hammersmith, and Brentford, to Brentford-bridge; the roads from Knightsbridge to Fulham-bridge; and from Fulham through Fulham-fields to the corner of the garden wall opposite the chapel at Hammersmith; and from Walham-green to the said Great Western Road near the east end of the town of Hammersmith; and from the Bell and Horns at Brompton to Earl's Court, and from thence to the said Great Western Road near Holland House; and from the west side of Ranelagh sewer, near Chelsea Bun-house, to the north end of Battersea-bridge; and from Chelsea Church, along Hogmore-lane, to the said Great Western Road near the east end of the town of Kensington; and from Chelsea Hospital, by Blacklands, to the road leading from Knightsbridge to Fulham; and from the King's Arms in Fulham to the entrance to the King's Road; which said several roads lie within the parishes of St. Margaret, Westminster, St. Mary Abbots, Kensington, St. Luke, Chelsea, All Saints, Fulham, Chiswick, Ealing, and Hanwell, all in Middlesex.

The second, comprising that part of the said Great Western road which leads from Brentford-bridge aforesaid, through Hounslow, to the bridge near the powder-mills, in the parish of Bedfont; the road leading from Hounslow aforesaid, to Cranford-bridge; the road leading out of the said Great Western Road, near the Coach and Horses' public-house, through Sion-lane, and the towns and parishes of Isleworth, Twickenham, and Teddington, to the gate on the south side of Teddington-field, in the road to Kingston-bridge; and, also, the road or highway called Pound-lane, or Lower Wood-lane, leading out of the said Great Western

Road, near Smallbury-green turnpike, to the George public-house in the town of Isleworth aforesaid; all in Middlesex.

The third, comprising so much of the road between Tyburn and the town of Uxbridge, as lies between Tyburn aforesaid, and the seventh mile-stone on the said road; and the road called Church-lane, leading from the Swan at Kensington Gravel-pits to the town of Kensington.

The fourth, comprising the remainder of the said road between Tyburn and Uxbridge; namely, that part which lies between the seventh mile-stone and the town of Uxbridge; and the road leading from Brent-bridge, over Hanwell-heath, through the parishes of New Hanwell, New Brentford, and Ealing, to the Great Western Road, and the wharfs on the River Thames.

The fifth, comprising an intended new road leading from the said road, between Tyburn and Uxbridge, at Shepherd's-bush Common, in the parish of Fulham, in the hamlet of Hammersmith, to the said Great Western Road, near Turnham-green, in the parish of Acton.

The sixth, comprising the road from the first carriage-bridge over the Grand Junction Canal at Paddington to Harrow-on-the-Hill; and a branch road from the said road, near a place called Chelsea-reach, between the second and third mile-stones on the said road, to the road next described as forming the seventh district, at or near to Pine-Apple Nursery, otherwise Pine-Apple Place.

The seventh, comprising the road from the carriage-bridge over the Regent's Canal, at Maida-hill, to Kilburn-bridge, and the continuation from Kilburn-bridge to the seventh mile-stone on the same road.

The eighth, comprising the remaining portion of the last-mentioned road, leading from the seventh mile-stone through the town of Edgeware, and terminating at Sparrow's Herne, in the county of Hertford.

The ninth, comprising the road from the Hampstead-road at Camden-town, St. Pancras, to the Great North Road, in the parish of St. Mary, Islington, and also along Park-street into Albany-street; the road commencing at the Angel at Islington, in the parish of Clerkenwell, and leading from thence through Holloway to Highgate Gate-house; the branch road diverting at the Turnpike-gate at Islington, running to the west of the town of Islington, and joining the last-mentioned road at Holloway, commonly called the Back-road; the road from Lower-street, Islington, to Newington-green, called the Lower-road; the road called Cross-street, from the Upper-street to the Lower-street; and the road from Ball's-Pond-gate to Kingsland; the road commencing at Battle-bridge, and leading from thence, by St. Pancras Church, through Kentish-town to Highgate Gate-house; the road commencing at St. James's Chapel, in the parish of St. Pancras, leading from thence through Camden-town, and uniting with the last-mentioned road, near the Black Horse public-house, at Kentish-town; the road leading from the last-mentioned road to Hampstead, and terminating near the Red Lion public-house; and the branch road from the said Highgate to the said Hampstead road, called Figg-lane.

The tenth, comprising the road from the north-west side of Goswell-street road, next Islington, to the north-west corner of Finsbury-square, by the Artillery-ground, commonly known by the name of the City-road.

The eleventh, comprising so much of the road, called the Stamford-hill road, as lies between the Stone's-end, in the parish of St. Leonard, Shoreditch, and the seventh mile-stone on the same road, situate near the public-house called the King's Head, at Lower Edmonton.

The twelfth, comprising so much of the Stamford-hill road as lies between the seventh mile-stone at Lower Edmonton, and the northernmost part of Enfield, in the county of Middlesex, next to the parish of Cheshunt, in the county of Hertford; and the new road, or diversion of the old road, herein-before directed to be made, between the ninth and tenth mile-stones on the said road at Enfield highway; and the road from the place where the watch-house in Edmonton formerly stood, to the market-place in Enfield aforesaid.

The thirteenth, comprising the road from Newington-green, through the lanes or highways, called the Green-lanes, to join the said road leading from Edmonton to the market-place in Enfield, at Bush-hill, in the parish of Edmonton, which road is commonly called the Green-lanes' road.

The fourteenth, comprising the new or branch road, hereinbefore directed to be made, from the Stamford-hill road, in the parish of Tottenham, nearly opposite to certain trees, called the Seven Sisters, to the Camden-town road, being the road described in the ninth district.

The fifteenth, comprising the roads leading from the church of St. Leonard, Shoreditch, through Hackney to Stamford-hill; and from Hackney across Cambridge-heath, over Bethnal-green, to the turnpike-gate at Mile End; and from Kingsland-green, in the parish of St. John Hackney, through Dalston to Church-street in the same parish.

The sixteenth, comprising the bridge over the Lea, commonly called Lea-bridge; the road across the marsh called Walthamstow or Low Layton marsh, and certain lands adjoining Mark House-lane; the road from Clapton in Middlesex, down to the river Lea; the roads from Mark House-lane into the great road at or near the sign of the Eagle, at Snaresbrook, in the parish of Wanstead, Essex; and the new road, hereinbefore directed to be made, commencing at the sixth mile-stone on this district of roads, passing across Epping Forest, and terminating at the turnpike-road from London to Epping, in Essex.

19. Directs tolls to be taken on the said roads after the 1st January.

(The 21st clause enacts that the same toll shall be paid by any carriage drawn or propelled by steam, as would have been payable if drawn by four horses.)

EAST INDIA OFFICES.

[10 Geo. IV. c. 62.—Passed 24th June, 1829.]

This is an act declaring that no person who shall be hereafter appointed governor or deputy-governor of any of the settlements, presidencies, territories, or plantations of the East India Company, shall be capable of being elected, or of sitting and voting as, a member of the House of Commons while he shall continue to hold such office, and that every person so sitting, &c. shall forfeit 500*l.*

MEMORANDUM.

The tota number of public general acts passed in the last session of Parliament, was sixty-three. Of forty-seven of these acts we have given abstracts in the preceding pages; of the remaining sixteen the following is a list:—

CAP. 2. Duties on personal estates and offices.
3. Appropriation of funds in the Exchequer.
4. To raise 12,000,000*l.* by Exchequer bills.
9. Remuneration of innkeepers for quartering soldiers.
12. Annual indemnity act.
13. Compensation monies.
14. Naval officers' widows' pensions.
15. Naval commissioners' quorum.
19. Registration of seisins (Scotland).
20. Spanish claims.
28. Consolidated Fund.
31. Funding Exchequer bills.
58. Oran and Drumtemple churches, Ireland.
60. To raise 13,438,800*l.* for the service of 1829.
61. Charing Cross improvement (Amendment).
63. Cotton Factories regulation (correction of an informality in c. 51).

XXX. ABSTRACTS OF PARLIAMENTARY DOCUMENTS.

*** In some of the following Abstracts, the fractions of pounds are omitted, which will produce a slight apparent error in the totals.

I.—*Finance.*

AN ACCOUNT of the ORDINARY REVENUES, and EXTRAORDINARY RESOURCES, constituting the Public Income of the UNITED KINGDOM of GREAT BRITAIN and IRELAND.

For the Year ended 5th January, 1829.

HEADS OF REVENUE.	Total Income including Balances.	Total Payments out of the Income in its progress to the Exch.	Payments into the Exchequer.
ORDINARY REVENUES.	£.	£.	£.
Customs	19,816,937	2,095,954	17,235,408
Excise	23,353,431	1,483,235	20,759,685
Stamps	7,613,720	225,515	7,107,950
Taxes, under the management of the Commissioners of Taxes	5,265,624	299,343	4,849,303
Post Office	2,386,732	702,418	1,508,000
One Shilling in the Pound, and Sixpence in the Pound, on Pensions and Salaries, and Four Shillings in the Pound on Pensions	59,468	1,302	55,006
Hackney Coaches, and Hawkers and Pedlars	77,614	10,789	66,611
Crown Lands	525,750	464,935	,,
Small branches of the King's hereditary Revenue	12,328	3,097	6,678
Surplus Fees of regulated Public Offices	67,081	,,	67,081
Poundage Fees, Pells Fees, Casualties, Treasury Fees, and Hospital Fees	9,353	,,	9,353
Totals of Ordinary Revenues	59,188,042	5,286,592	51,665,077
*** The gross Receipt has been collected at an Average of £6 7*s.* 3*d.* per £100.			
OTHER RESOURCES.			
Money received from the East India Company, on account of Retired Pay, Pensions, &c. of His Majesty's Forces, serving in the East Indies, per Act 4 Geo. IV. c. 71	60,000	,,	60,000
Money received from the Trustees of Naval and Military Pensions	3,082,500	,,	3,082,500
Imprest Monies, repaid by sundry Public Accountants, and other Monies paid to the Public	260,530	,,	260,530
Repayment on Account of Money advanced out of the Consolidated Fund, in the Year 1825, for silver coinage	94,000	,,	94,000
From the Bank of England, on account of Unclaimed Dividends	25,034	,,	25,034
	62,710,108	5,286,592	55,187,142

ABSTRACT of the NET PRODUCE of the REVENUE of GREAT BRITAIN, in the Years ended on the 10th of Oct. 1828, and the 10th of Oct. 1829.

	1828.	1829.	Increase.	Decrease.
Customs	£16,358,170	£15,961,206	. .	£396,964
Excise	17,905,978	17,904,027	. .	1,951
Stamps	6,575,318	6,704,792	£129,374	. .
Post-Office	1,387,000	1,396,000	9,000	. .
Taxes	4,836,464	4,905,886	69,422	. .
Miscellaneous	556,171	600,848	44,677	. .
	47,619,101	47,472,659	252,473	398,915
Deduct Increase			. .	252,473
Decrease on the Year			. .	146,442

An ACCOUNT of the NET PUBLIC EXPENDITURE of the UNITED KINGDOM.

EXPENDITURE.	£.	s.	d.	£.	s.	d.
Dividends, Interest, and Management of the Public Funded Debt, (exclusive of 4,667,965*l.* 5*s.* issued to the Commissioners for the Reduction of the National Debt,)	27,146,076	8	1¼			
Interest on Exchequer Bills	949,429	13	7			
				28,095,506	1	8¼
Trustees for Naval and Military Pension Money, per Act 3 George IV., c. 51	1,107,130	0	0			
Ditto Bank of England, per 4 Geo. IV., c. 22	585,740	0	0			
				1,692,870	0	0
Civil List, 4 Quarters, to Jan. 5, 1829	1,057,000	0	0			
Pensions, ditto, to Oct. 10, 1828	370,867	12	8			
Salaries and Allowances, ditto	78,204	0	0			
Courts of Justice, ditto	150,365	3	3¼			
Mint, ditto	16,813	2	7			
Bounties, ditto	2,956	13	8			
Miscellaneous, ditto	227,387	10	9			
Ditto Ireland, ditto	303,959	0	11½			
				2,204,553	3	10¾
For the purchase of the Duke of Athol's Interest in the Public Revenues of the Isle of Man				132,944	0	0
Army	8,084,042	11	0¾			
Navy	5,667,969	12	1			
Ordnance	1,446,972	0	0			
Miscellaneous	2,012,145	17	11			
				17,211,100	1	0¾
				49,336,973	6	7¾
Surplus of Income over Expenditure				5,850,169	10	3¼
				55,187,142	16	11¼

NOTE.—This Statement has been prepared agreeably to the views expressed on the subject in the Fourth Report from the Select Committee on Public Income and Expenditure, in the previous Session of Parliament, by excluding from it the advances and re-payments, on account of the Employment of the Poor, and for Local Works, and by including the same in the account of Funded and Unfunded Debt, to which they more immediately relate.

UNREDEEMED FUNDED DEBT, AND CHARGE THEREOF.

	Debt.	Charge.
Total Debt, 5th January, 1829,		
Great Britain	741,089,836	26,436,359
Ireland	31,232,704	1,165,897
	772,322,540	27,602,256

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Imprest Monies, repaid by sundry Public Accountants, and other Monies paid to the Public	260,530	„	260,530
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Stamps	6,575,318	6,704,792	£129,374	. .
Post-Office	1,387,000	1,396,000	9,000	. .
Taxes	4,836,464	4,905,886	69,422	. .
Miscellaneous	556,171	600,848	44,677	. .
	47,619,101	47,472,659	252,473	398,915
Deduct Increase			. .	252,473
Decrease on the Year			. .	146,442

An ACCOUNT of the NET PUBLIC EXPENDITURE of the UNITED KINGDOM.

EXPENDITURE.	NET EXPENDITURE.					
	£.	s.	d.	£.	s.	d.
Dividends, Interest, and Management of the Public Funded Debt, (exclusive of 4,667,965*l.* 5*s.* issued to the Commissioners for the Reduction of the National Debt,)	27,146,076	8	1¼			
Interest on Exchequer Bills	949,429	13	7			
				28,095,506	1	8¼
Trustees for Naval and Military Pension Money, per Act 3 George IV., c. 51	1,107,130	0	0			
Ditto Bank of England, per 4 Geo. IV., c. 22	585,740	0	0			
				1,692,870	0	0
Civil List, 4 Quarters, to Jan. 5, 1829	1,057,000	0	0			
Pensions, ditto, to Oct. 10, 1828	370,867	12	8			
Salaries and Allowances, ditto	78,204	0	0			
Courts of Justice, ditto	150,365	3	3¼			
Mint, ditto	16,813	2	7			
Bounties, ditto	2,956	13	8			
Miscellaneous, ditto	227,387	10	9			
Ditto Ireland, ditto	303,959	0	11½			
				2,204,553	3	10¾
For the purchase of the Duke of Athol's Interest in the Public Revenues of the Isle of Man				132,944	0	0
Army	8,084,042	11	0¾			
Navy	5,667,969	12	1			
Ordnance	1,446,972	0	0			
Miscellaneous	2,012,115	17	11			
				17,211,100	1	0¾
				49,336,973	6	7¾
Surplus of Income over Expenditure				5,850,169	10	3¾
				55,187,142	16	11½

NOTE.—This Statement has been prepared agreeably to the views expressed on the subject in the Fourth Report from the Select Committee on Public Income and Expenditure, in the previous Session of Parliament, by excluding from it the advances and re-payments, on account of the Employment of the Poor, and for Local Works, and by including the same in the account of Funded and Unfunded Debt, to which they more immediately relate.

UNREDEEMED FUNDED DEBT, AND CHARGE THEREOF.

	Debt.	Charge.
Total Debt, 5th January, 1829,		
Great Britain	741,089,836	26,436,359
Ireland	31,232,704	1,165,897
	772,322,540	27,602,256

TAXES.

It being desirable to exhibit to the House of Commons a detailed view, under heads, of the sources of Revenue, an account was prepared, shewing, with great accuracy and minuteness, the rate of duty on each article of Customs, Excise, and Stamps—and the produce of Direct Taxes. These accounts were sub-divided as follows:—

1. } Duties on articles being Materials of Manufactures,
2. } Buildings, Ship-Building, &c., &c.
3. }
4. Duties on British Manufactures.
5. } Duties on Articles of Luxury.
6. }
7. Principal Direct Taxes.
8. The Land Tax.
9. Duties on Articles of Food.
10. Taxes on Capital.

The year 1827 was the nearest complete period for which these accounts could be prepared. The Return was ordered by the House of Commons to be printed 16th April, 1829, and has been carefully abstracted, as foliows:—

1. *Articles being Materials of Manufactures, Building, Ship Building, &c.* (*Customs.*)

	£.	s.	d.
Annatto, per lb., flag 2*d.*, other sorts 1*s.*	1,877	16	10
Antimony, crude, per cwt. 15*s.*	697	15	9
Argol, per cwt., of British possessions 1*s.*, other places 2*s.*	1,123	2	6
Ashes, pearl and pot, of British possessions free, other places 6*s.* per cwt.	5,777	13	2
Barilla and Alkali, if not containing more than 20 per cent. of mineral alkali, until the 6th Jan. 1829, 8*l.* 10*s.* per ton; from thence to 6th Jan. 1830, 6*l.* 10*s.* per ton; from and after 5th Jan. 1830, 5*l.* per ton; if a greater proportion than 20 per cent. higher rates of duty according to such excess	79,419	9	11
Bark, oak and cork-tree, per cwt. 8*d.*	29,138	4	4
Brimstone, per cwt. rough 6*d.*; refined 6*s.*; in flour 9*s.* 9*d.*	5,243	8	1
Borax, per lb. refined 6*d.*; unrefined 3*d.*	2,737	2	3
Bristles, per lb. dressed 1*s.*; rough and in tufts, and not sorted 2½*d.*; sorted or arranged in colours 3½*d.*	25,868	19	9
Cochineal, per lb. of British possessions, 2*d.*, other places 6*d.*	4,162	13	11
Cork, per cwt. 8*d.*	20,390	5	3
Dye and Hard Woods, viz.			
Boxwood, per ton, of British possessions 1*l.*, other places 5*l.*	2,179	17	9
Brazil and Zebra, per ton, Brazil 5*l.*; Zebra 2*l.*	634	17	7
Braziletto, or Jamaica, per ton 16*s.* 8*d.*	100	14	5
Camwood, per ton 15*s.*	479	18	8
Cedar, per ton, of British possessions 10*s.*, other places 2*l.* 10*s.*	4,498	6	2
Ebony, per ton, of any British possession, imported direct 15*s.*; green ebony ditto 3*s.*; otherwise imported 10*l.*	169	19	9
Fustic, per ton, from any British possession 3*s.*; other places 4*s.* 6*d.*	821	14	5
Lignum Vitæ, per ton, of British possessions 10*s.*; other places 2*l.*	648	8	6

	£.	s.	d.
Logwood, per ton, from any British possession 3*s.*; other places 4*s.* 6*d.*	1,441	8	3
Mahogany, per ton, of Bermuda or Bahama islands, imported direct, or from the Bay of Honduras, in a British ship cleared out from the port of Belize, 2*l.* 10*s.*; from Jamaica 4*l.*; otherwise imported 7*l.* 10*s.*	68,729	19	4
Nicaragua wood, per ton 15*s.*	1,433	7	2
Red or Guinea wood, per ton 15*s.*	3	1	4
Barwood, per ton 7*s.*	74	3	7
Saunders, Red, per ton 12*s.*	97	9	5
Rosewood, per cwt. 10*s.*	7,276	5	4
Elephants' teeth, per cwt. 1*l.*	3,257	12	9
Feathers for beds, per cwt. 2*l.* 4*s.*	5,523	17	3
Flax and tow, and codilla of hemp and flax, per cwt. 1*d.*	8,974	4	0
Furs, by the skin, varying according to the value, from hare and coney 1*s.* per 100, to leopard and tiger 9*s.* 6*d.* each; with an exemption in many cases in favour of British possessions of about one-half	21,976	9	0
Galls, per cwt. 5*s.*	864	5	9
Gums, viz., animi and copal, arabic, guaiacum, lac of all sorts, senegal, and tragacanth, at various rates, from arabic at 6*s.* per cwt. to shell lac at 20 per cent. *ad val.*	23,458	13	10
Hair, horse, per cwt. 6*d.* after Aug. 10, 1828; human, per lb. 1*s.*; camels and goats, of British possessions free, of other places, per lb. 1*d.* cow, ox, or elk, per cwt 2*s.* 6*d.*; unenumerated, 5 per cent. *ad val.*	6,870	15	2
Hemp, dressed, per cwt. 4*l.* 15*s.*, undressed 4*s.* 8*d.*; unless of any British possession, or of New Zealand, then free	104,473	2	9
Hides, not tanned or dressed, per cwt. dry 4*s.* 8*d.*; wet 2*s.* 4*d.*; of British possessions, dry 2*s.* 4*d.*, wet 1*s.* 2*d.*; of the West coast of Africa, not exceeding 14 lbs. each, per cwt. 2*s.* 4*d.*	26,104	18	5
—— tanned, horse, ox, or cow, not otherwise dressed, per lb. 6*d.*; cut or trimmed 9*d.*; of any British possession 3*d.*, and 4½*d.* respectively; losh hides, per lb. 1*s.* 8*d.*; Muscovy or Russia, 15*s.* each	2,219	8	0
Horns, horn-tips, and pieces of horns, per cwt. 2*s.* 4*d.*	814	10	9
Indigo, per lb. of any British possession 3*d.*; other places 4*d.*	31,378	12	8
Iron, in bars, or unwrought, per ton, of any British possession, 2*s.* 6*d.*; of other places 1*l.* 10*s.*	21,431	0	1
—— of other sorts, in rods, &c. per cwt. 5*s.*; cast 10 per cent. *ad val.*; hoops, per cwt. 1*l.* 3*s.* 9*d.*; old, per ton 12*s.*; ore, per ton 5*s.*; pig, of any British possession, per ton 1*s.* 3*d.*; of other places 10*s.*; wire, per cwt. 1*l.*; unenumerated, 20 per cent. *ad val.*	805	5	5
Isinglass, per cwt. of any British possession 15*s.* 10*d.*, of other places 2*l.* 7*s.* 6*d.*	3,752	4	3
Juniper berries, per cwt. 11*s.* 1*d.*	4,220	1	2
Lead, pig, per ton 2*l.*	32	12	3
——, black, per cwt. 4*s.*	1,302	12	6
Madder, per cwt. 6*d.*, and Madder-root, per cwt. 1*s.* 6*d.*	29,817	0	3
Mother-of-pearl shells, 5 per cent. *ad val.*	502	10	9
Oil, olive, per ton 8*l.* 8*s.*; palm, per cwt. 2*s.* 6*d.*; train, spermaceti, and blubber, of British fishing, per ton 1*s.* of foreign, 26*l.* 12*s.*	53,941	4	5

	£.	s.	d.
Oker, per cwt. 6*s.* 9*d.*	828	1	10
Orchal and orchelia, per cwt. 3*s.*	685	7	1
Paper, brown, per lb. 3*d.* unenumerated 9*d.*	913	5	0
Pitch, per cwt. of any British possession 9*d.*; other places 10*d.*	1,289	9	8
Platting of chip and straw, of bast cane, chip, or horse-hair, per lb. 1*l.*; of straw, 17*s.*	3,394	16	7
Quicksilver, per lb. 6*d.*	4,979	3	6
Rags, &c. for making paper, per ton 5*s.*	2,026	11	9
Saltpetre, per cwt. 6*d.*	4,017	8	9
Seeds of all sorts—acorns, per bushel, 1*s.*; aniseed, per cwt. 3*l.*; buck-wheat, per quarter, 14*s.* until July 15th, 1828, since which it is subject to the scale of duties fixed by 9 Geo. IV. c. 60, as corn; burnet, per cwt. 1*l.*; canary, 3*l.*; carraway, 1*l.* 10*s.*; carrot, per lb. 9*d.*; clover and grass seeds of all sorts, per cwt. 1*l.*; coriander, 15*s.*; cummin, 1*l.*; fennel, per lb. 9*d.*; fenugreek, per cwt. 9*s.* 6*d.*; flax and linseed, per quarter 1*s.*; forest and garden, unenumerated, per lb. 6*d.*; hemp of British possessions, per quarter 1*s.*; other places, 2*l.*; leek and onion, per lb. 1*s.* 6*d.*; millet, per cwt. 11*s.* 6*d.*; mustard, per bushel 8*s.*; parsley, per lb. 1*d.*; peas for seed, per bushel 7*s.* 6*d.*; piony, per lb. 6*d.*; quince, 3*s.*; rape, per last 10*s.*; tares, per quarter 10*s.*; worm, per lb. 1*s.* 8*d.*; unenumerated, 30 per cent. *ad val.*	166,604	10	2
Shumac, per cwt. 1*s.*	3,515	17	2
Silk, raw, waste, knubs, and husks, per lb. 1*d.*	15,608	2	7
—— thrown, not dyed, organzine and crape, per lb. 5*s.*; tram, 3*s.*; singles, 2*s.*; dyed, organzine and crape, 6*s.* 8*d.*; singles or tram, 4*s.*	112,768	2	6
Skins, not being furs, at various rates of duty, from tanned calf-skin, cut or trimmed, at 1*s.* 2*d.* per lb., to deer-skins, from British America, at 1*s.* per 100	21,034	16	6
Smalts, per lb.	12,517	15	2
Soap, of any British possession in the East Indies, per cwt. hard, 1*l.* 8*s.*, soft, 1*l.* 3*s.*; other places, hard, 4*l.* 10*s.*, soft, 3*l.* 11*s.* 3*d.*	1,506	11	5
Spelter, per cwt. 10*s.*	3,190	8	0
Stones, viz. marble blocks, per solid foot 1*s.*	845	2	7
Tallow, from any British possession not in Europe, per cwt. 1*s.*; other places, 3*s.* 2*d.*	188,557	15	3
Tar, of any British possession, per last 12*s.*; other places 15*s.*	9,505	9	4
Timber, viz. balks and ufers, battens and batten ends, clap and pipe boards, paling, deals, deal ends, firewood, fir quarters, handspikes, knees of oak, lathwood, masts and spars, oak plank, oars, staves, fir timber 8 in. square and upwards, oak timber, ditto, wainscot logs ditto, unenumerated timber ditto, and teakwood, at various rates of duty, governed by the dimensions, with exemptions in favour of British possessions	1,556,038	2	11
Tortoiseshell, unmanufactured, from any British possession, per lb. 6*d.*; other places, 2*s.*	1,673	3	0
Turmeric, from any British possession, per cwt. 2*s.* 4*d.*; other places, 10*s.*	867	8	6
Turpentine, common, not of greater value than 12*s.* per cwt. 4*s.* 4*d.* per cwt.	65,566	18	1

	£.	s.	d.
Valonia, per cwt. 1*s.* 6*d.*	7,058	9	4
Verdigris, per lb. 2*s.*	4,414	6	0
Vermilion, per lb. 1*s.*	299	4	9
Wax, bees, from any British possession, per cwt. unbleached, 10*s.*, bleached, 1*l.*; other places, unmanufactured, 3*l.* 6*s.* 6*d.*, white or manufactured, 6*l.* 3*s.* 6*d.*	12,596	3	4
Whalefins, British fishing, per ton 1*l.*, foreign, 95*l.*	769	14	8
Wool, Cotton, from any British possession, per cwt. 4*d.*; other places, 6 per cent. *ad val.*	332,355	11	11
—— sheep and lambs, of any British possession, free; other places, per lb. ½*d.* if under the value of 1*s.* per lb., if above, 1*d.*	106,286	4	2
Yarn, Linen, raw, per cwt. 1*s.*	1,668	13	6
—— Mohair and camels', per lb. 1*d.*	222	17	9
Zaffre, per lb. 1*d.*	990	2	9

2. *Articles being Materials of Manufactures, and included under "all other Merchandize" in the Appendixes to the Annual Accounts.*

Articles and Rate of Duty.	Net Produce.
Acid, boracic, per lb. 4*d.*	£516 7 8
Alum, per cwt. 17*s.* 6*d.* rock, 11*s.* 8*d.*	62 14 1
Amber, rough, per lb. 1*s.* 8*d.*	35 7 1
Aquafortis, per cwt. 14*s.* 3*d.*	Nil.
Arsenic, white, per cwt. 14*s.* 3*d.*; other sorts, 18*s.* 8*d.*	437 16 5
Ashes, soap, weed, and wood, per cwt. 1*s.* 8*d.*	861 18 5
Asphaltum, of any British possession, per lb., 5*d.*, other places, 10*d.*	496 5 3
Bark, extract of, for tanning, per cwt. 3*s.*	10 9
——, not enumerated, for tanning or dyeing, of any British possession, 10, of other places, 20 per cent. *ad val.*	170 4 5
Basket rods, per bundle, 3*s.* 2*d.*	3 16 1
Bell-metal, per cwt. 1*l.*	8 10 8
Bricks, per 1000, 1*l.* 2*s.* 6*d.*	540 0 5
Bulrushes, per load of 63 bundles, 12*s.*	960 19 9
Chalk, unmanufactured, 20 per cent. *ad val.*	1 11 0
Coals, per ton 2*l.*	0 6 11
Cobalt, per lb. 3*d.*	287 8 4
Copper, of the British possessions within the limits of the East India Company's charter, ore, per cwt. 1*s.*; old, for remanufacture, 9*s.* 2*d.*; unwrought, 9*s.* 2*d.*; other places, ore, 12*s.*; old 15*s.*; unwrought, 1*l.* 7*s.*	395 17 0
Copperas, blue or green, per cwt. 6*s.*; white, 12*s.*	351 8 10
Coral, in fragments, per lb. 1*s.*; whole, unpolished, 5*s.* 6*d.*	9 2 1
Crystal, rough, 20 per cent. *ad val.*	89 13 0
Down, per lb. 1*s.* 3*d.*	142 14 10
Dye and hardwoods; viz. beef-wood from New South Wales, per ton 5*s.* cocus-wood of any British possession, per ton 3*s.* olive-wood of any British possession, per ton 12*s.* 4*d.*; other places, 8*l.* 9*s.* 6*d.* sapan-wood, per ton 15*s.*	20 19 5
Emery stones, per cwt. 2*s.*	1,096 19 1
Enamel, per lb. 7*s.* 2*d.*	0 12 7
Glue, per cwt. 12*s.*	174 0 11
Gypsum, of any British possession, per ton, 1*s.* 3*d.*; other places, 1*l.* 11*s.* 8*d.*	7 6 4

	£.	s.	d.
Heath, for brushes, per cwt. 9*s.* 2*d.*	Nil.		
Jet, per lb. 2*s.*	0	2	0
Lamp-black, per cwt. 3*l.* 6*s.* 6*d.*	3	14	10
Latten, black, per cwt. 8*s.* shaven, 12*s.*	Nil.		
Lead, chromate of, per lb. 2*s.*	Nil.		
—— ore, per ton, 1*l.* 5*s.*	538	3	8
——, red, per cwt. 6*s.*, white, 7*s.*	21	16	10
Leaf gold, 3*s.* per 100 leaves; metal, not gold, 3*d.* per 250 leaves	823	18	1
Millboards, per cwt, 3*l.* 8*s.* 2*d.*	0	17	8
Moso rock, for dyer's use, per ton, 15*s.*	158	17	7
Nitre, viz. cubic nitre, per cwt. 6*d.*	Nil.		
Nuts, castor, from any British possession, per cwt. 6*d.* other places, per lb. 2*d.*	Nil.		
Oakum, per cwt. 4*s.* 9*d.*	490	19	9
Oil of cocoa-nut, per cwt. 2*s.* 6*d.*	497	9	10
— of rapeseed, linseed, and hempseed, per ton, 39*l.* 18*s.*	16	10	2
— of turpentine, per lb. 8*d.* of vitriol, per lb. 6*d.*	0	8	0
Ore, not otherwise enumerated, 20 per cent. *ad val.*	593	12	5
Orpiment, per cwt. 1*l.* 8*s.* 6*d.*	Nil.		
Orsedew, per lb. 6*d.*	36	8	11
Parchment, per doz. 10*s.*	0	10	0
Pasteboards, per cwt. 3*l.* 9*s.* 2*d.*	1	9	10
Plaster of Paris, per cwt. 1*s.*	16	2	9
Platina, per oz. 1*s.* ore of, 5 per cent. *ad val.*	28	12	10
Polishing rushes, 20 per cent. *ad val.*	2	13	0
Pumice stones, per ton, 1*l.* 13*s.* 4*d.*	290	13	6
Rosin, of the British possessions, per cwt. 3*s.* 2*d.*; other places, 4*s.* 9*d.*	8	2	3
Saccharum Saturni, per lb. 10*d.*	Nil.		
Sal ammoniac, per lb. 3*d.*	Nil.		
Scaleboards, per cwt. 3*l.* 8*s.* 2*d.*	Nil.		
Sea-horse teeth, per cwt. 3*l.* 4*s.*	77	1	1
Stones, flint, for potters, per ton, 2*s.* 6*d.*	Nil.		
——, for lithography, per cwt. 3*s.*	115	10	9
Tarras, per bushel, 1*s.* 3*d.*	81	6	3
Teazles, per 1000, 1*s.*	115	3	7
Terra Japonica, per cwt. 3*s.* sienna, 1*l.* 11*s.* 8*d.* umbra, 12*s.*	1,220	10	3
Tiles, Dutch, 15 per cent. *ad val.*; other sorts, 50	8	18	2
Timber, anchor stocks, of British America, 10*d.* each; other parts, 8*s.* 4*d.* each	38	12	2
Tin, per cwt. 2*l.* 10*s.*	1	11	3
Varnish, unenumerated, 30 per cent. *ad val.*	1,895	6	8
Vellum, per skin, 7*s.* 2*d.*	Nil.		
Weld, per cwt. 1*s.*	20	8	7
Woad, per cwt. 3*s.*	31	0	8
Wool, beaver, per lb. 1*s.* 7*d.*, cut and combed, 4*s.* 9*d.*	Nil.		
——, coney and hares, per lb. 2*d.*	146	4	1
Yarn, cable, per cwt. 10*s.* 9*d.* worsted, per lb. 6*d.*	1	4	0
Coals and Culm, coastways into any port in England, per ton 4*s.*; per chaldron 6*s.*; Wales, per ton 1*s.* 8*d.*; Ireland, 1*s.* 7½*d.*	838,508	8	5

	£.	s.	d.
Slates, according to size; if delivered by tale, per 1000, from 6*s.* to 35*s.* 6*d.*; if by weight, per ton, from 13*s.* to 15*s.* 6*d.*, not otherwise enumerated, 25 per cent. *ad val.* Scotch slates, 7*s.* 6*d.* per 1000, or as above at importer's option	39,271	1	8
	£4,153,070	5	9

Note.—The rates of duty affixed to the various articles in this Return are those to which they are subject in Great Britain. The same rates are chargeable in Ireland in every instance except in the case of certain descriptions of wood, namely, deals and battens, the duties of which are in Ireland regulated by a different scale from that established in Great Britain.

3. *Articles, being Materials of Manufactures, Building, &c.* (*Excise.*)

Bricks and tiles—bricks, per 1000, common, 5*s.* 10*d.*, polished, 12*s.* 10*d.*; exceeding 10 inches long and 5 wide, as paving tiles; tiles, per 1000, plain, 5*s.* 8*d.*, pan or ridge, 12*s.* 10*d.*; per 100, small paving, 2*s.* 5*d.*, large, 4*s.* 10*d.*, all other 4*s.* 10*d.* per 1000 . .	368,538	14	4½
Hides and skins, Tanned—all hides whatsoever, per lb. 1½*d.*, calf-skins, kips, hog and dog-skins, 1½*d.*; goat-skins, with shumack, to resemble Spanish leather, per doz. 4*s.*; sheep-skins for roans, after the nature of Spanish leather, 2*s.* 3*d.*; sheep and lamb skins for gloves and basils, per lb. 1½*d.*; other skins, and all parts and pieces of hides, and skins, 6*d.* Tawed—hides of horses, mares, and geldings, per hide, 1*s.* 6*d.*; of steers or cows, or any other hides except horse-hides, &c. 3*s.*; calf-skins, kips, and seal-skins, per lb. 1½*d.*; slink calf-skins with hair, per doz. 3*s.*; without hair, and dog-skins, 1*s.*; buck and doe skins, per lb. 6*d.*; goat and beaver-skins, per doz. 2*s.*; other skins, and all parts and pieces of skins, per lb. 6*d.* Dressed in oil—buck, deer, and elk skins, per lb. 6*d.*; sheep and lamb skins, 3*d.*; all other hides, 3*d.*; all other hides and skins, and parts and pieces of hides and skins, 6*d.*; vellum, per doz. 3*s.* 6*d.*; parchment, 1*s.* 9*d.*	386,039	19	7¼
Soap, hard, per lb. 3*d.*, soft, 1¾*d.*	1,199,409	18	0¾
Starch per lb. 3¼*d.*	84,897	4	6
	£2,038,885	16	6½

4. *British Manufactures.* (*Excise.*)

Glass. Materials for flint glass, per lb. 3*d.*; ditto plate, per cwt. 3*l.*; crown glass, per cwt. 3*l.* 13*s.* 6*d.*; broad ditto, 1*l.* 10*s.*; green ditto, 8*s.* 2*d.* . . .	613,508	3	9½
Paper. First class paper, per lb. 3*d.*; second ditto, 1½*d.*; glazed paper, millboard, and scaleboard, per cwt. 1*l.* 1*s.*; pasteboard, 1st class, 1*l.* 8*s.*; ditto, 2d ditto, 14*s.* .	649,779	8	11
Printed goods. Foreign calicoes, per yard, 7*d.*; British calicoes and muslins, 3½*d.*; stained paper, 1¾*d.* .	662,141	16	1¼
	£1,925,429	8	9½

5. *Articles of Luxury.* (*Customs.*)

Almonds of any British possession, bitter, per cwt. 15*s.* 10*d.*; Jordan, 2*l.* 7*s.* 6*d.*; other places, bitter, 1*l.* 11*s.* 8*d.*; Jordan, 4*l.* 15*s.*; any other sort, 2*l.* 7*s.* 6*d.*	17,991	8	1
Apples, dried, per bushel, 7*s.*; not dried, 4*s.* . . .	5,775	4	10

	£.	s.	d.
Beer, spruce, per barrel of 32 gallons, 3*l.* 6*s.*	6,228	16	10
Capers, per lb. 6*d.*	2,056	8	9
Chinaware, porcelain, and earthenware, plain, 15 per cent. *ad val.*; ornamented 30	5,247	2	1
Cinnamon, of any British possession, per lb. 2*s.* 6*d.*; other places, 3*s.* 6*d.*	1,807	19	7
Clocks, 25 per cent. *ad val.*	3,814	19	5
Cloves, of any British possession, per lb. 2*s.*; other places, 3*s.*	8,602	1	9
Cocoa nuts, of any British possession in America, per lb. 6*d.*; foreign, 1*s.* 3*d.*; cocoa nut husks and shells, per lb. 2*d.*; chocolate, or cocoa paste, of any British possession, per lb. 1*s.* 9*d.*; other places, 4*s.* 4*d.*	13,236	14	1
Coffee, of any British possession in America, per lb. 6*d.*; of Sierra Leone, 9*d.*; from any British possession within the limits of the E. I. C. charter, 9*d.*; from any other place within those limits, 1*s.*; otherwise imported, 1*s.* 3*d.*	399,690	6	5
Coral beads, per lb. 15*s.* 10*d.*	2,356	4	8
Cranberries, per gallon, 6*d.*	773	5	11
Currants, per cwt. 2*l.* 4*s.* 4*d.*	265,365	11	7
Eggs, 10*d.* per 120	23,062	19	1
Essence of bergamot and lemons, per lb. 4*s.* 6*d.*	3,349	18	10
Feathers, ostrich, dressed, per lb. 1*l.* 10*s.*; undressed, 10*s.*	565	2	11
Figs, per cwt. 1*l.* 1*s.* 6*d.*	18,916	11	2
Flowers, artificial, not of silk, 25 per cent. *ad. val.*	1,166	18	11
Ginger, dry, of any British possession, per cwt. 11*s.* 6*d.*; other places, 2*l.* 13*s.*; preserved, of any British possession, per lb. 3*s.*; other places, 3*s.* 2*d.*	7,456	19	3
Grapes, 20 per cent. *ad. val.*	1,981	0	2
Hats—bast, cane, chip, or horse-hair, not exceeding 22 inches in diameter, per doz. 1*l.*; above 22 inches, 2*l.*; straw, not exceeding 22 inches, 3*l.* 8*s.*; above 22 inches, 6*l.* 16*s.*	74,107	9	9
Honey, of any British possession, per cwt. 5*s.* other places, 15*s.*	485	3	3
Hops, per cwt. 8*l.* 11*s.*	20	15	3
Horses, each, 1*l.*	2,683	0	0
Lace, thread, 30 per cent. *ad val.*	713	12	10
Leather gloves, habit, per dozen pairs, 4*s.*; men's, 5*s.*; women's, 7*s.*	15,695	15	0
Lemons and oranges, according to the size of packages, or, at the option of importer, 75 per cent. *ad val.*	67,835	8	6
Linens, various rates according to the species of manufacture	22,059	15	10
Liquorice juice, per cwt. 3*l.* 15*s.*	24,341	14	8
Mace, from any British possession, per lb. 3*s.* 6*d.*; other places, 4*s.* 6*d.*	2,962	18	9
Mats, Russia, 1*l.* 3*s.* 9*d.* per 100; from any British possession, 5 per cent. *ad val.*; other places, 20 per cent.	9,288	19	5
Musical instruments, 20 per cent. *ad val.*	1,037	18	6
Nutmegs, from any British possession, 2*s.* 6*d.*; other places, 3*s.* 6*d.*	15,707	2	8
Nuts, chesnuts, and walnuts, per bushel, 2*s.*	15,207	14	4
Olives, per gallon, 2*s.*	515	10	0
Onions, per bushel, 3*s.*	914	13	6
um, per lb. 4*s.*	7,893	18	0

	£.	s.	d.
Pictures, 1*s.* each; and further, 1*s.* each square foot; 200 square feet or upwards, 10*l.*	3,395	5	9
Pimento, of any British possession, per lb. 5*d.*; other places, 1*s.* 3*d.*	6,619	0	4
Plums, dried, per cwt. 1*l.* 7*s.* 6*d.*	1,013	19	5
Prints and drawings, plain, each 1*d.*; coloured, 2*d.*	1,468	15	4
Prunes, per cwt. 1*l.* 7*s.* 6*d.*	11,207	6	6
Quills, goose, 2*s.* 6*d.* per 1000	4,245	9	1
Raisins, Denia and Lexia, per cwt. 1*l.*; of the sun, 2*l.* 2*s.* 6*d.*; and other sorts, 1*l.* 2*s.*; of all sorts of the British possessions, 10*s.*	163,513	15	9
Sago, from any British possession, pearl and powder, per cwt. 1*l.*; common, 1*s.*; other places, pearl and powder, 1*l.* 10*s.*; common, 5*s.*	4,156	8	0
Silk manufactures, at various rates according to the species of manufacture	171,360	19	11
Spirits:—viz.			
Rum, per gallon, 8*s.* 6*d.*	1,396,576	8	11
Brandy, ditto, 1*l.* 2*s.* 6*d.*	1,471,678	7	9
Geneva, ditto, 1*l.* 2*s.* 6*d.*	59,352	4	5
Other sorts, of the British possessions, sweetened or mixed, per gallon, 1*l.*; not sweetened, 8*s.* 6*d.*; other places, 1*l.* 10*s.* and 1*l.* 2*s.* 6*d.*	8,055	9	7
Sugar, of British possessions in America and Mauritius, per cwt. 1*l.* 7*s.*; within the limits of the E. I. C. charter, 1*l.* 17*s*; of any other place, 3*l.* 3*s.*	4,650,192	6	0
Tamarinds, of British possessions in America or Africa, per lb. 2*d.*; within the limits of the E. I. C. charter, 6*d.*; other places, 8*d.*	1,571	15	1
Tapioca, per cwt. 10*s.*	348	2	6
Tobacco and snuff, unmanufactured, of British possessions in America, per lb. 2*s.* 9*d.*; other places, 3*s.*; manufactured, or segars, per lb. 9*s.*; snuff, 6*s.*	2,826,378	17	1
Vermicelli and macaroni, per lb. 8*d.*	2,322	18	6
Water, Cologne, per flask of not less than 30 to the gallon, 1*s.*	3,574	1	5
Wines, Cape, per gallon, 2*s.* 5*d.*; French, 7*s.* 3*d.*; other sorts, 4*s.* 10*s.*	1,600,587	8	4
	£13,438,536	3	3

6. *Articles of Luxury.—Excise.*

	Rates of Duty.	Net Produce.		
Beer—Victuallers, per barrel, Strong Beer, 9*s.* 10*d.*; Table, 1*s.* 11½*d.*—Common Brewers, Strong Beer, 9*s.*; Table, 1*s.* 9½*d.*—Intermediate, 4*s.* 11*d.*		£3,204,389	12	11⅝
Candles—Tallow, per lb. 1*d.*; Wax and Spermaceti, 3½*d.*		485,349	17	11¼
Cyder and Perry, per gallon, 2½*d.*		27,001	14	1½
Hops, per lb. 2*d.*		441,463	2	0
Malt, per bushel, 2*s.* 7*d.*		3,339,143	7	9
Spirits, British, in England, per gallon, 7*s.*; Scotland and Ireland, 2*s.* 10*d.*		4,107,582	0	6
Sweets and Mead, per gallon, 6*d.*		3,784	18	8½
Tea, sold at or under 2*s.* per lb. £96 per cent.; above 2*s.* per lb., £100 per cent.		3,263,202	5	7¼
Vinegar, per gallon, 2*d.*		24,665	15	3¾
		£14,896,582	14	11

7. *Principal Direct Taxes.*

	Net Produce.		
Windows	£1,151,073	17	5½
Servants	272,234	3	11
Carriages	331,891	2	11
Horses for Riding	341,832	5	7
Dogs	183,161	1	0½
Hair Powder	21,129	2	6
Armorial Bearings	50,292	10	0
Game Duties	159,372	18	8
Composition Duty	31,442	18	8
	£2,542,430	0	9

For Scale of Duties, see the *British Almanac.*

8. *The Land Tax.*

Land Tax on Lands and Tenements	£1,188,428	9	9

9. *Articles of Food.—Customs.*

Rates of Duty.	Net Produce.		
Bacon and Hams, per cwt. £1. 8*s.*	£ 3,991	5	6
Butter, per cwt. £1	209,338	15	8
Cheese, per cwt. 10*s.* 6*d.*	98,096	8	2
Corn, Grain, Meal, and Flour	786,097	5	4
The rates of Duty on Corn, Grain, Meal, and Flour are regulated by the average prices of the respective articles, according to the Scale fixed by Act 9 Geo. IV., c. 60.			
Rice, per cwt. of any British Possession 1*s.*; of other places, 15*s.*	25,583	7	1
—— rough, and in the husk, per quarter, of any British Possession 1*d.*; of other places, 1*l.*	20,955	5	3
	£1,144,062	7	0

10. *Direct Taxes on Capital.*

Legacies	Great Britain	£1,030,341	10	2	1,066,091	10 11
	Ireland	35,750	0	9		
Probates, Administrations, Testamentary Inventories	Great Britain	809,202	0	6	838,220	0 6
	Ireland	29,018	0	0		
					£1,904,311	11 5

II.—*Trade.*

Value of the IMPORTS into, and of the EXPORTS from, the *United Kingdom* of Great Britain and Ireland, during each of the three years ending the 5th January, 1829.

Years ending 5th January.	Value of Imports into the United Kingdom, calculated at the Official Rates of Valuation.	Value of Exports from the United Kingdom, calculated at the Official Rates of Valuation.			Value of the Produce and Manufactures of the United Kingdom, Exported therefrom, according to the real or declared value thereof.
		Produce and Manufactures of the United Kingdom.	Foreign and Colonial Merchandise.	Total Exports.	
	£.	£.	£.	£.	£.
1827.....	37,686,113	40,965,735	10,076,286	51,042,022	31,536,723
1828.....	44,887,774	52,219,280	9,830,728	62,050,008	37,182,857
1829.....	45,028,805	52,797,455	9,946,545	62,744,000	36,814,176

Number of VESSELS employed in the Trade of the United Kingdom, entered inwards, and cleared outwards (including their repeated Voyages), for the Year ending 5th Jan. 1829.

Inwards.				Outwards.			
British.		Foreign.		British.		Foreign.	
Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
13,436	2,094,357	4,955	634,620	12,248	2,006,397	4,405	608,118

Amount of TONNAGE and Number of MEN employed in the Coasting Trade, which have entered and cleared out of the Ports of Great Britain, for 1828.

Inwards.		Outwards.	
8,911,109 Tons.	512,584 Men.	8,957,286 Tons.	517,129 Men.

Number of STEAM VESSELS, with the amount of Tonnage and number of Men, belonging to the several Ports of the United Kingdom, for the year 1828.

338 Vessels. 30,912 Tons. 2,708 Men.

Account of the quantity of TONNAGE employed by the East India Company confined to such ships as returned to England with cargoes.

Years	Indian Possessions.	China.
1826–7	6,972 tons.	28,571 tons.
1827–8	7,911 tons.	27,868 tons.

Years	Cleared out from Canton to England.
1827	37,385 tons.
1828	29,556 tons, the year not complete.

Account of the Number of SHIPS, with the Amount of their TONNAGE, which have entered Inwards and cleared Outwards, at the several Ports of Great Britain, from and to the East Indies, in the Year ending 5th Jan. 1829.

Inwards.		Outwards.	
153 ships.	64,436 tons.	192 ships.	80,537 tons.

Trade with the Baltic.—The following Vessels passed the Sound in 1828:

British	4,381	Hanoverians	570	Oldenburghers	43
Prussians	2,257	Russians	417	Hamburghers	23
Swedes	1,289	Americans	216	Portuguese	8
Dutch	1,111	French	129	Sardinians	2
Norwegians	1,085	Lubeckers	117		
Danes	907	Bremeners	60	Total	13,263
Mecklenburghers	648				

EAST INDIA TRADE.

ACCOUNT of the Declared Value of all GOODS EXPORTED from GREAT BRITAIN to the EAST INDIES and CHINA, together with the MAURITIUS, in the Year ending 5th January, 1829.

Species of Merchandise.	By the East India Company. £.	s.	d.	Free Trade, including the Privilege Trade £.	s.	d.	Total. £.	s.	d.
Apothecary Wares	19,075	4	10	10,207	8	6	29,282	13	4
Apparel	13,001	8	5	18,301	17	6	31,303	5	11
Beer and Ale	.	.		99,077	6	3	99,077	6	3
Books, Printed	802	2	0	21,785	2	6	22,587	4	6
Brass	808	14	6	2,697	0	0	3,505	14	6
Cabinet and Upholstery Wares	.	.		4,502	0	0	4,502	0	0
Carriages	.	.		16,945	0	0	16,945	0	0
Coals	240	15	0	2,691	11	0	2,932	6	0
Cochineal	.	.		19,506	6	0	19,506	6	0
Colours for Painters	579	19	1	13,294	5	0	13,874	4	1
Copper, in Bricks and Pigs	.	.		70,286	12	0	70 286	12	0
—— in Sheets and Nails	4,786	17	2	108,204	5	2	112,991	2	4
—— Wrought	11,497	2	4	13,008	13	6	24,505	15	10
Cordage	5,926	19	2	6,804	0	0	12,730	19	2
Cotton Manufacture, British	9,905	12	6	1,646,849	8	4	1,656,755	0	10
—— Foreign	.	.		9,484	6	0	9,484	6	0
—— Twist and Yarn, British	10,363	7	10	382,771	6	8	393,134	14	6
—— Foreign	.	.		6,117	0	0	6,117	0	0
Earthenware of all sorts	939	9	0	25,686	3	1	26,625	12	1
Glass	2,810	0	0	112,187	15	11	114,997	15	11
Guns and Pistols	88,334	3	7	8,385	0	0	96,719	3	7
Haberdashery and Millinery	.	.		40,847	15	0	40,847	15	0
Hardwares and Cutlery	18,387	18	6	60,451	17	8	78,839	16	2
Hats of all sorts	1,383	13	8	9,660	14	0	11,044	7	8
Iron, Bar and Bolt	33,607	2	0	139,544	11	4	173,151	13	4
—— Cast and Wrought	45,669	10	2	57,121	19	4	102,791	9	6
Lace and Thread of Gold and Silver	267	13	4	3,773	0	0	4,040	13	4
Lead and Shot	29,366	16	4	29,697	5	9	59.064	2	1
Leather and Saddlery	12,707	1	9	33,479	11	6	46,186	13	3
Linen Manufactures	3,993	4	11	32,217	6	1	36,210	11	0
Military Stores, not otherwise described	20,070	9	11	5,356	10	0	25,426	19	11
Musical Instruments	2,990	9	9	15,321	10	0	18,311	19	9
Opium	.	.		49,275	0	0	49,275	0	0
Ordnance of Brass and Iron	64,672	14	6	.	.		64,672	14	6
Plate, Plated Ware, Jewellery and Watches	190	0	0	50,709	16	2	50,899	16	2
Provisions	8,721	13	0	21,048	17	0	29.770	10	0
Quicksilver	.	.		4,293	0	6	4,293	0	6
Silk Manufactures	.	.		20,058	0	0	20,058	0	0
Soap and Candles	397	0	0	2,561	9	9	2,958	9	9
Spelter, Foreign	.	.		59,486	0	6	59,486	0	6
Spirits, British	.	.		2,779	15	6	2,779	15	6
—— Foreign	146	7	11	45,337	3	10	45,483	11	9
Stationery	40,190	1	8	44,544	13	3	84,734	14	11
Steel, Unwrought	427	4	0	5,061	18	4	5,489	2	4
Sugar, Refined	492	0	2	2,439	18	5	2,931	18	7
Swords	5,379	3	9	891	0	0	6,270	3	9
Tin, Unwrought	24	0	0	195	0	0	219	0	0
Tin and Pewter Wares, and Tin Plates	1,315	1	0	7,632	13	10	8,947	14	10
Wines	907	5	5	203,114	18	9	204,022	4	2
Woollen Manufactures, British	622,775	8	1	263,257	5	6	886,032	13	7
—— Foreign	.	.		12,726	0	0	12,726	0	0
All other Articles	43,772	12	4	263,751	1	6	307,523	13	10
£	1,126,926	7	7	4,085,426	16	11	5,212,353	4	6

ACCOUNT of the Value of all Goods, the produce of the East Indies and China, IMPORTED into Great Britain, for the Year ending 5th January, 1829.

Species of Merchandise.	By the East India Company.	Free Trade, including the Privilege Trade	Total.
	£.	£.	£.
Borax, refined	. .	315	315
—— unrefined	. .	583	583
Camphire, unrefined	. .	28,007	28,007
Canes, Rattans, not ground	. .	20,674	20,674
Cassia Lignea	. .	24,614	24,614
Cinnamon	. .	118,119	118,119
Cloves	. .	46,759	46,759
Coffee	65	153 366	153,431
Cotton Wool	20,587	585,774	606,361
Cotton Piece Goods, viz. White Calicoes and Muslins	89,487	9,670	99,157
—— Nanquin Cloths	. .	92,680	92,680
—— Dyed Cottons	53,011	58,945	111,956
Ebony	. .	5,411	5,411
Elephants' Teeth	. .	16,398	16,398
Galls	. .	5,231	5,231
Ginger	. .	6,067	6,067
Gum, Animi and Copal	. .	7,221	7,221
—— Arabic	. .	3,060	3,060
—— Lac-dye	. .	94,765	94,765
—— Shell-lac	. .	17,528	17,528
Hemp	. .	13,473	13,473
Indigo	629,689	2,194,702	2,824,391
Mace	. .	7,373	7,373
Mother of Pearl Shells, rough	. .	7,738	7,738
Nutmegs	. .	10,897	10,897
Oil, Castor	. .	7,562	7,562
Olibanum	. .	5,522	5,522
Pepper	. .	80,376	80,376
Rhubarb	. .	13,183	13,183
Rice	. .	105,215	105,215
Rice in the Husk, or Paddy	. .	5,213	5,213
Safflower	. .	8,388	8,388
Sago	. .	5,308	5,308
Saltpetre	43,865	196,821	240,686
Silk, raw	910,389	368,279	1,278,668
Silk Manufactures, viz. Bandannoes, Romals and Handkerchiefs	44,618	107,779	152,397
—— Crape in pieces	. .	842	842
—— Crape Shawls, Scarfs, Gown Pieces and Handkerchiefs	. .	13,041	13,041
—— Taffeties, Damasks, and other Silks, in pieces	6,812	14,896	21,708
Sugar, unrefined	131,582	718,787	850,369
Tea	3,646,800	206,567	3,853,367
Tin	. .	6,866	6,866
Tortoiseshell, rough	. .	57,143	57,143
Turmeric	. .	11,406	11,406
Other Articles	. .	181,107	181,107
Total	£5,576,905	5,643,671	11,220,576

Prime Cost and Quantity of TEA *Exported* from Canton, by the East India Company, from 1824–5 to 1827–8; together with the Quantity sold, and Amount thereof, in England and the North American Colonies, during the same period.

	Exported from Canton.		Sales. England.	Sales. N. Amer. Colonies.	
	lbs.	Prime Cost.	lbs.	lbs.	Sale Amount.
1824–5	28,697,088.	£1,900,666	26,523,327	——	£3,741,402
1825–6	27,821,121	1,729,949	27,803,668	512,314	3,946,770
1826–7	40,182,241	2,368,461	27,700,978	723,081	3,567,737
1827–8	33,269,333	2,086,971	28,120,354	941,794	3,468,590

Quantity and Value of TEAS sold by the East India Company, at the Cape of Good Hope, Quebec, and Montreal, and Halifax, during the specified Years, with the rate of Duty at each place.

	Cape of Good Hope.		Quebec and Montreal.		Halifax.	
	lbs.	£.	lbs.	£	lbs.	£
1825–6	120,172	20,033	512,314	74,085	——	——
1826–7	104,545	17,361	392,134	49,151	330,947	33,494
1827–8	90,538	14,573	547,232	70,924	394,562	38,711
	Rate of Duty 10 per cent. on the net proceeds of sale.		Rate of Duty, Bohea per lb. 2*d.*, Hyson 6*d.*, all other sorts 4*d.* (currency).		Rate of Duty 3½*d.* per cent. on the invoice cost.	

Quantity of TEA put up for Sale, and Quantity refused by the Buyers, for the Years 1826, 7, and 8.

	Put up for sale. lbs.	Refused. lbs.
1826	30,100,000	690,749
1827	30,600,000	272,831
1828	31,300,000	1,317,920

Quantity of TEA *Imported* into, and *Exported* from, the United States, during the Years 1826 and 1827, with the Value.

	Imported. lbs.	£	Exported. lbs.	£
1826	10,098,900	781,725	2,804,753	272,694
1827	5,875,599	357,243	1,626,417	160,926

Account of the AMERICAN TRADE to China and the East Indies, for the Years ending Sept. 30, 1826 and 1827.

	China.		East Indies.	
	Imports from.	Exports to.	Imports from.	Exports to.
	£	£	£	£
1826	1,546,288	534,717	523,042	92,139
1827	753,579	805,084	118,553	219,052

Rate of DUTY as imposed by the American Tariff of 1824.

	Teas from China, in		Teas from any other place, in	
	Vessels of United States and those placed on an equality.	Other Foreign Vessels.	Vessels of United States and those placed on an equality.	Other Foreign Vessels.
	Cents. per lb.	Cents. per lb.	Cents. per lb.	Cents. per lb.
Bohea	12	14	14	15 2/5
Souchong, and other Black	26	34	34	37 2/5
Imperial, Gunpowder, and Gomee	50	68	68	74 4/5
Hyson, and Young Hyson	40	56	56	61 3/5
Hyson, Skin, and other Greens	28	38	38	41 4/5

It appears by the statement from which the above account is made out, that nearly the whole of the Duty is drawn back on re-exportation.

Account of the Quantity of TEA consumed in the principal European States, together with the Rate of Duty and Price per lb. English, unless otherwise specified. The prices given are in most of the instances the wholesale prices.

France.—Annual average consumption, 220,053 lbs.; duty from 9½*d.* to 1*s.* 2½*d.*; price from 1*s.* 9*d.*, Bohea, to Pekao (Pekoe), 6*s.* 11*d.*

Netherlands.—Annual importation about 2,500,000 lbs., duty varying from 1½*d.* to 4½*d.*; price from Bohea 8*d.* to 1*s.* 7*d.*, to Pecco 4*s.* 11*d.* to 6*s.* 5*d.*

Russia.—Annual consumption, 5,187,496 lbs.; duty from about 1*s.* 6*d.* to 1*s.* 9*d.*; price, black tea from 5*s.* 10*d.* to 1*l.* 9*s.* 2*d.*, green from 6*s.* 10*d.* to 1*l.* 18*s.* 10*d.*

Hamburgh.—Annual importation 1,650,300 lbs., the greater part going to the interior of Germany; duty 1⅛ per cent.; price, from Bohea 5*d.* to 7*d.*, to Pecco (Pekoe?) 2*s.* 11*d.* to 4*s.* 7*d.**

Bremen.—Imported 1826 and 1827, 431,010 lbs., exported chiefly to East Friesland and the Upper Weser; duty ½ per cent.; price, from Bohea 9½*d.* to 10*d.*, to Pecco 3*s.* 4*d.* to 8*s.* 4*d.*

Prussia.—Quantity not known; duty 1*l.* 12*s.* 1*d.* per cwt.; prices from 2*s.* 6*d.* to 13*s.* 6*d.* per lb.

Denmark.—Annual consumption about 129,000 lbs.; duty 2 per cent. *ad val.* to a chartered company; prices, from Bohea 1*s.* 8*d.*, to Hyson 4*s.*

Austrian Ports in the Adriatic.—Venice, not more than 2 cwt. per annum; duty 1*s.* 5¾*d.*; price 7*s.* 6*d.* to 8*s.* Trieste, about 5 cwt. imported free, but on leaving for the interior, same as Venice; price, from Hyson 2*s.*, to Gunpowder Pearl, 5*s.* Fiume and Ragusa, very inconsiderable, under similar regulations as at Trieste. Hyson about 5*s.* 6*d.* per lb.

Sardinian States.—Annual consumption, 5625 lbs.; duty about 11*d.* per lb.; price, from black tea at 10*d.* to Pearl tea at 2*s.* 8*d.* per Genoa lb. (12 oz.)

Tuscany.—Annual consumption, from 3000 to 4000 lbs.; duty from 1*s.* 6*d.* to 3*s.* per 100 lb.; price 1*s.* 4*d.* to 2*s.* 6*d.* per lb. (of 12 oz.)

Roman States.—Annual consumption, 4243 lbs.; duty 11*d.*; price from 4*s.* to 8*s.* 7*d.*

Naples.—Imported 1826 and 1827, 9380 lbs.; duty 8*d.*; price, black 6*s.* 8*d.*; green 7*s.* 4*d.*

Sicily.—About 1700 lbs.; duty 1*s.* 3*d.*; price, Bohea 4*s.*, green 6*s.*

An Account of the Annual Value of the Trade between the Subjects of Great Britain and China in the following Years.

	Value of Exports and Imports between India and China.		Total.	Value of Exports and Imports between England and China on account of the Company.	Total value of the British Trade with China.
	On account of Individuals.	On account of the Company.			
1825-26...	£3,943,729	£291,603	£4,235,332	£2,687,013	£6,922,345
1826-27...	3,764,404	362,405	4,126,809	3,176,901	7,303,710

	Value of the Trade of Individuals with China as above.	Value of the Trade of the Company with China.	Total Values as above.
1825-26...	£3,943,729	£2,978,616	£6,922,345
1826-27...	3,764,404	3,539,306	7,303,710

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* It appears from information transmitted by Henry Canning, Esq. Consul-General at Hamburgh, that the prices of tea, both there and in the Netherlands, have occurred under the circumstances of an overstocked market; and that black tea, equal in quality to that which forms the staple consumption of Great Britain, scarcely appears in the Hamburgh market.

Total Quantity of GRAIN, MEAL, and FLOUR entered for Home Consumption since the passing of the Act 9 Geo. IV. c. 60, (July 1828,) to the 28th Feb. 1829, with the amount of Duty received.

	From Foreign Countries.	British Posses. out of Europe.	Total.	Duty.		
	qrs.	qrs.	qrs.	£	s.	d.
Total of Grain....	1,724,789	17,333	1,742,122	252,595	9	4
	cwt.	cwt.	cwt.			
Meal, and Flour .	169,028	17,823	186,851	4,387	14	8
			Total Duty	£256,983	4	0

Account of the Quantity of FOREIGN WOOL *Imported* into the Port of London, or Out Ports, during the last Six Years, ending 5th Jan. 1829; also the Quantity of BRITISH WOOL *Exported* from the same since the passing of the Law allowing such Exports (5 Geo. IV. c. 47).

Countries whence imported.	1824. lbs.	1825. lbs.	1826. lbs.	1827. lbs.	1828. lbs.	1829. lbs.
Germany	12,562,434	15,412,275	28,799,661	10,545,232	21,220,788	22,015,585
Portugal, Azores, and Madeira . . .	1,132,513	506,372	968,994	531,576	459,468	328,829
Spain and Canaries .	4,318,708	5,020,679	8,206,427	1,619,405	3,898,006	3,808,662
Prussia	17,321	20,382	131,100	53,848	798,422	786,399
United Netherlands.	221,414	557,388	1,059,243	247,113	392,454	314,724
France	409,872	103,691	443,033	109,906	345,360	39,233
New South Wales, and Van Dieman's Land	477,261	382,907	323,995	1,106,302	512,758	1,574,186
Other places . . .	238,726	568,923	3,905,508	1,783,153	1,515,034	1,379,290
	19,378,249	22,572,617	43,837,961	15,996,715	29,142,290	30,246,898

Exported	Wool. lbs.	Woollen Yarn, including Yarn mixed with other materials. lbs.
From 10th Dec. 1824 to 5th Jan. 1825 ...	18,367	3,524
Year ending 5th Jan. 1826	112,424	76,961
„ „ 1827	143,130	131,032
„ „ 1828	278,552	255,708
„ „ 1829	1,669,389	436,722

Account of the Number of Bushels of MALT charged with Duty, from 5th April 1826 to 5th April 1829, with the Amount in each Year, in England and Scotland (duty, per quarter, 20*s.* 8*d.*; made from bear or bigg in Scotland, 16*s.*)

	England.				Scotland.			
	Bushels.	£	s.	d.	Bushels.	£	s.	d.
Year ended 5th April, 1827 .	25,342,913	3,273,459	11	11	2,490,066	305,806	0	0
„ „ 1828 .	28,738,524	3,712,059	7	0	3,194,336	395,978	16	4
„ „ 1829 .	28,216,984	3,644,693	15	4	3,711,412	457,792	8	5

Number of Barrels of BEER brewed, upon which Duty has been charged, from 5th July 1827 to 5th April 1829, in England and Scotland.

Quarters ended	England.						Scotland.					
	Strong. brls.	Table. brls.	Inter. brls.	Amount. £	s.	d.	Str. brls.	Table. brls.	Amount. £	s.	d.
10th Oct. 1827..	1,423,424	455,436	4,887	709,337	17	9	19,290	73,696	15,514	7	6
5th Jan. 1828...	1,627,749	314,126	6,590	790,280	18	1	36,185	51,954	21,149	7	4
5th Apr. 1828...	1,909,120	341,234	11,848	922,066	17	9	35,937	57,447	21,563	12	9
	4,960,293	1,110,796	23,325	2,421,685	13	7	91,412	183,097	58,227	7	7
10th Oct. 1828..	1,469,970	442,536	17,995	733,852	4	1	19,533	74,871	14,916	19	9
5th Jan. 1829...	1,620,588	318,347	9,992	788,946	7	8	35,975	52,356	21,290	15	4
5th Apr. 1829...	1,798,427	322,408	10,839	868,378	1	3	29,394	52,433	19,586	2	8
	4,888,985	1,083,291	38,826	2,391,176	13	0	84,902	179,660	55,793	17	4

Quantity of SUGAR and COFFEE *Imported* into Great Britain from the several British Colonies and Plantations, from the British Possessions in the East Indies, and from Foreign Countries, from 5th Jan. 1828 to 5th Jan. 1829, with the Net Produce of Duty thereon.

	Sugar. cwt.	qrs.	lbs.	Coffee. lbs.
British Colonies	3,968,074	2	22	29,452,000
Mauritius	361,325	0	14	—
British East India Possessions	156,265	3	0	7,380,492
Foreign Plantations	136,782	3	0	3,850,035
	4,622,448	1	8	40,682,527
Total imported into Ireland	245,571	2	4	387,204
	4,868,019	3	12	41,069,831

Net Produce of Duty:—	£	s.	d.	£	s.	d.
Great Britain	4,576,287	13	4	425,389	3	7
Ireland	426,008	16	9	14,855	10	3
	£5,202,296	10	1	£440,244	13	10

FOREIGN WINES and SPIRITS that paid Duty in the *United Kingdom* for the Year ending 5th Jan. 1829, Rate and Amount of Duty, and Quantity remaining in Bond.

Wine.	Gallons.	Amount of Duty. £	s.	d.	Rate of Duty per gallon. £	s.	d.	Remaining in Bond. Gallons.
Cape	653,742	78,254	13	11	0	2	5	544,102
French	475,374	172,001	2	9	0	7	3	518,816
Other sorts	6,318,293	1,525,768	14	11	0	4	10	8,944,614
	7,447,409	1,776,024	11	7				10,007,532
Foreign Spirits.								
Rum	3,277,653	1,392,824	7	1	0	8	6	3,774,305
Brandy	1,325,208	1,489,701	18	1	1	2	6	1,341,573
Geneva	45,266	50,954	2	2	1	2	6	81,600
Other sorts	10,271	10,054	19	0	from 8s. to 30s.			14,609
	4,658,398	2,943,535	6	4				5,212,087

An Account of the number of LAMB and KID SKINS, which have been entered for Home Consumption in the following Years: also of the quantity of Dozens of Gloves which such Lamb and Kid Skins would produce, estimating that from each 120 Skins there would be manufactured 18 dozen Pair of Gloves. (The estimate of the number of Gloves produced is not in the Parliamentary Papers, but has been calculated upon a satisfactory average.)

Years.	Lamb. No. of Skins.	Kid. No. of Skins.	Total Lamb & Kid.	Gloves. Dozens produced each Year.	Gloves. Dozens imported.	Total Consumption of Gloves, including Foreign. (Doz.)
1820	932,817	286,443	1,219,260	182,889		182,889
1821	1,202,029	242,996	1,445,025	216,756		216,756
1822	1,908,651	408,523	2,317,174	347,562		347,562
1823	1,974,143	497,444	2,471,587	370,728		370,728
1824	2,201,295	631,995	2,833,290	424,980		424,980
1825	2,098,553	771,522	2,870,075	430,506		430,506
1826	1,743,778	575,533	2,319,311	347,886	41,330*	389,216
1827	2,749,397	640,863	3,390,260	508,536	68,123	576,659
1828	2,917,476	904,639	3,822,115	573,300	95,737	669,037

* The laws permitting importation took effect in the summer of this year.

Amount of BRITISH MANUFACTURED SILK GOODS *Exported* in the Years 1826, 7, and 8.

	1826.	1827.	1828.
Manufactures of Silk only.	£73,046 17 6	£94,490 0 0	£97,451 6 10
Silks mixed with other materials	95,554 5 5	137,299 2 1	158,419 4 6
Total declared value ...	£168,601 2 11	231,789 2 1	255,870 11 4

III.—*Law.*

Return of the Total Amount of the Effects of the Suitors of the High Court of Chancery, in the following years:—

	£.	s.	d.		£.	s.	d.
1819	33,798,708	3	7	1824	38,585,812	3	3
1820	34,208.785	8	2	1826	39,174.722	8	7
1821	35,643,623	1	1	1827	39,009,942	14	4
1822	36,632,921	15	9	1828	39,216,326	0	1
1823	37,938,369	3	0				

Return of the Number of Persons who have taken the benefit of the Insolvent Debtor's Act, in the Years 1827 and 1828.

	1827.	1828.
By the Court in London	2.631	2,105
By the Commissioners on Circuit ...	2,127	1,586
By Justices in Wales	110	108
	4,868	3,799

Return of the Number of Prisoners for Debt, committed to the Custody of the Keepers of the King's Bench, the Fleet, Whitecross-Street, the Marshalsea, and Horsemonger-Lane Prisons, in the year 1828; also the Number remaining in Custody on the 1st of January, 1829.

	Committed.	Remaining
King's Bench	1253	540
Fleet	550	246
Whitecross-Street	1526	402
Ditto, by Process out of the Court of Requests	1437	
Marshalsea	495	96
Horsemonger-Lane	1206	110
	6467	1394

Number of Warrants granted for Debt, upon Mesne Process, or on Writs of Execution against the Person, by the Sheriffs of London and Middlesex, and by the Sheriff of Surrey; and the Number of Bailable Processes executed by them, in 1828.

	Mesne Processes.	Writs.	Bailable Processes.
London . .	3324	609	1976
Middlesex . .	10,652	2473	5540
Surrey . .	2612	455	1340
	16,588	3537	8856

Return of Number of Persons charged with Criminal Offences committed for trial, whether convicted or acquitted, and the Number executed in England and Wales, with a similar Return for Ireland, in the years 1827 and 1828.

ENGLAND AND WALES.

	1827.	1828.
Committed for trial—Males	15,151	13,832
Females	2,770	2,732
	17,921	16,564
Convicted	12,564	11,723
Acquitted	3,407	3,169
No Bills found, and not prosecuted	1,950	1,672
	17,921	16,564
Of whom were executed	70	79

IRELAND.

	1827.	1828.
Committed for trial—Males	14,598	11,919
Females	3,433	2,764
	18,031	14,683
Convicted	10,207	9,269
Acquitted	3,059	2,245
No Bills found	4,461	3,078
Bailed, and not prosecuted	304	91
	18,031	14,683
Of whom were executed	37	21

(For similar Returns from 1822 to 1826, see Companion for 1828.*)

Return of the Number of Male Convicts sent to New South Wales and Van Dieman's Land, in 1826 and 1827; with the total Expense of their Conveyance, and the average per head.

	Number.	Total Expense.	Average about
1826.	2097	£53,349 5 2	£25 8 10
1827.	3393	£81,682 17 8	£24 1 6

* *Administration of Justice in France.*—A very minute report is published annually in France, by the Keeper of the Seals, on the Administration of Justice. That for 1828 has recently been issued. The operations of the Courts of Assize occupy 90 tables. These courts decided within the year on 6396 cases, including 7396 accused, being an increase of 467 above those of 1827. The proportion which persons accused bear to the whole population, was in 1827 as 1 to 4593, and in 1828 as 1 to 4307. Among the 7396 persons brought to the bar of the Courts of Assize, 5970 were men, and 1426 women, being in the proportion of 19 to 100. Among these, 4166 could neither read nor write; 1858 could write and read but imperfectly; 780 had the first elements of knowledge in perfection, and 118 had received an education in colleges, or otherwise superior to that supplied by primary schools. Of the 7396 prisoners, 2845 prisoners were acquitted, and 4551 convicted. Of the latter, 114 were condemned to death, 268 to hard labour for life, 1142 to hard labour for different terms, 1228 to solitary imprisonment, and the rest to different kinds of correctional penalties. The proportion of acquittals to convictions is as 39 to 61. In the number of the persons convicted and condemned, 5833 appealed to the Court of Cassation against their sentence. Among the 114 condemned to capital punishment, 17 were persons who had already been sentenced to penalties less severe. The Chambers of First Instance discharged before trial 16,409 persons who had been arrested, or against whom informations had been lodged. The police cases or charges decided within the year amounted to 95,589, including 132,169 persons. This is an excess of 9162 over those of the preceding year.

Among the facts of which justice was called upon to verify and state the causes, were 4855 accidental deaths, 1754 suicides, and 86 duels, of which 29 were fatal.

IV.—*Poor Rates.*

ABSTRACT of RETURNS, showing the Amount of Monies levied in each County in England and Wales, in the Year ending 25th March, 1828; distinguishing the Payments made thereout for other purposes than the Relief of the Poor, the Sums expended, &c., pursuant to Act 59 Geo. III., c. 12., (omitting fractions.)

Counties.	Total Sums levied.	Payments thereout for other purposes than the Relief of the Poor.	Sums expended for the Relief of the Poor.	Total Sums expended.	Select Vestries.	Assistant Overseers.	Increase per Cent.	Diminution per Cent.
ENGLAND.	£.	£.	£.	£.				
Bedford	88,854	9,187	77,976	87,164	21	25	..	5
Berks	112,124	13,778	96,257	110,036	21	41	..	3
Buckingham	143,851	16,630	124,198	140,829	52	48	..	6
Cambridge	109,215	15,857	91,307	107,165	15	34	1	
Chester	139,411	38,412	100,601	139,014	119	106	..	7
Cornwall	121,177	16,847	101,538	118,386	42	27	2	
Cumberland	60,471	12,639	45,971	58,610	75	60	..	
Derby	101,960	27,901	76,034	103,936	68	69	..	1
Devon	248,017	35,426	207,780	243,207	104	100	..	3
Dorset	94,981	12,389	80,492	92,881	30	45	..	3
Durham	98,993	19,501	78,965	98,467	83	61	3	
Essex	290,077	36,974	247,386	284,361	39	77	..	5
Gloucester	198,907	55,835	149,856	205,691	59	78	..	2
Hereford	69,284	12,601	57,500	70,101	41	45	..	
Hertford	106,079	15,542	89,909	105,451	15	31	..	3
Huntingdon	46,135	6,430	38,841	45,271	13	18	..	8
Kent	376,371	51,672	333,029	384,702	52	162	..	1
Lancaster	496,776	190,083	289,335	479,418	202	206	..	17
Leicester	132,693	22,664	110,501	133,166	65	50	..	6
Lincoln	225,718	55,709	169,890	225,599	163	121	1	
Middlesex	759,935	101,590	659,484	761,074	15	54	8	
Monmouth	30,429	7,242	23,337	30,580	14	22	..	2
Norfolk	319,994	37,242	281,121	318,364	91	93	..	5
Northampton	162,571	19,672	140,585	160,257	72	63	..	5
Northumberland	82,469	11,168	70,639	81,807	57	47	2	
Nottingham	94,887	25,001	71,534	96,536	35	63	..	1
Oxford	140,108	15,549	122,073	137,623	54	61	2	
Rutland	12,544	3,365	9,291	12,657	35	11	..	2
Salop	97,890	17,431	80,195	97,627	49	72	..	1
Somerset	190,700	28,556	159,810	188,367	85	95	..	2
Southampton	212,719	22,304	186,456	208,761	44	51	1	
Stafford	168,074	37,152	128,466	165,619	66	84	3	
Suffolk	247,179	30,882	216,055	246,938	54	107	..	3
Surrey	285,091	48,336	236,063	284,399	16	32	..	2
Sussex	261,743	32,467	228,938	261,405	64	92	..	5
Warwick	168,132	30,787	146,353	177,141	50	53	1	
Westmorland	32,943	4,814	27,364	32,179	58	25	1	
Wilts	183,429	21,105	158,109	179,215	30	51	..	4
Worcester	92,577	17,364	74,028	91,393	45	54	..	4
York { East Riding.	118,002	24,858	95,419	120,278	89	25	..	
York { North do.	100,450	21,428	77,601	99,030	125	43	1	
York { West do.	368,547	92,518	270,889	363,408	154	152	..	9
Tot. of England £	7,391,528	1,316,929	6,031,200	7,348,130	2,581	2,754		2
WALES.								
Anglesey	18,528	2,494	15,684	18,178	27	15	3	
Brecon	19,866	3,520	16,172	19,692	16	11	..	5
Cardigan	20,388	3,803	16,449	20,253	10	8	3	
Carmarthen	37,023	6,181	30,227	36,409	42	11	..	
Carnarvon	24,652	4,186	20,038	24,224	19	17	4	
Denbigh	39,908	8,052	32,634	40,687	20	30	1	
Flint	24,137	4,302	19,910	24,213	12	14	5	
Glamorgan	39,465	6,204	33,392	39,596	33	55	1	
Merioneth	16,931	2,136	14,746	16,883	2	10	2	
Montgomery	38,682	6,675	32,006	38,681	22	18	7	
Pembroke	29,010	5,268	23,370	28,639	26	19	4	
Radnor	14,930	2,676	12,166	14,843	13	5	1	
Total of Wales £	323,526	55,503	266,799	322,302	242	213	2	
Total of England & Wales	7,715,055	1,372,433	6,298,000	7,670,433	2,823	2,967	..	2

V. *Miscellaneous.*

FIRE INSURANCE.—Amount of Duty on Fire Insurances, paid by the London Fire Offices, for the Year 1828.

	£.	s.	d.
Sun	114,205	10	10
Phœnix	62,839	3	7
Royal Exchange	49,416	11	7
County	47,413	9	7
Protector	46,446	19	9
Guardian	29,684	19	5
Imperial	28,647	5	0
Globe	25,367	3	9
Atlas	19,522	0	0
Alliance	19,095	4	5
Union	16,412	11	6
British	16,293	9	3
Westminster	14,264	2	11
Hand-in-Hand	11,975	9	0
Albion (discontinued)	9,442	9	8
London	7,262	11	1
Palladium	5,028	15	3
Eagle (discontinued)	2,764	3	8

Number of Persons admitted to view the British Museum, from Christmas, 1823, to Christmas, 1828.

From Christmas, 1823,	to Christmas, 1824,	112,840
1824	1825,	127,643
1825	1826,	123,302
1826	1827,	79,131
1827	1828,	81,228

Note.—The days of public admission are the Mondays, Wednesdays, and Fridays in every week (except in the Christmas, Easter, and Whitsun weeks; also on the 30th of January, Ash Wednesday, Good Friday, and any Fast or Thanksgiving days ordered by proclamation, and during the months of August and September), when, between the hours of ten and two, visiters are admitted immediately on their application.

RETURNS made by the Police Authorities to the Prefet de Police of Paris,* of the number of English now resident in France.

Paris	14,500	Fontainebleau	30
Versailles	2,080	St. Quentin	200
St. Germain	150	Dunkirk	500
Tours	2,795	St. Omer	700
Bordeaux	965	Boulogne	6,800
Barréges	80	Calais	4,550
Montpellier	300	Other places	1,865
Marseilles	120		
Lyons	60		35,695

Of this number 6680 are mechanics. Their annual expenditure is estimated at £3,835,420 sterling.

* [This statement is not from the Parliamentary Returns.]

XXXI. CHRONICLE OF THE SESSION OF PARLIAMENT.
[10 Geo. IV., 1829.]

PARLIAMENT opened by commission. His Majesty's speech read by
Feb. the Lord Chancellor, embracing the following topics:—assurances
5. from foreign states of their desire of a continuance of their friendly relations with this country; preliminaries of a treaty of peace between the Emperor of Brazil and the Republic of La Plata, entered into through our mediation; convention with Spain for the final settlement of the claims of British and Spanish subjects; regret that the diplomatic relations with Portugal were still suspended, and negotiations entered into with the head of the House of Braganza to terminate that state of affairs; efforts to effect the pacification of Greece, and cordial union of France and Russia for that purpose; continuance of hostilities between Russia and the Ottoman Porte, and blockade of the Dardanelles by the former power; estimates of the current year; continued improvement of the revenue, and gratifying increase in that branch of it derived from articles of internal consumption; state of Ireland; existence of the Catholic Association dangerous to the public peace and inimical to the spirit of the Constitution; the wisdom of Parliament relied on to grant the necessary powers to maintain just authority; this object being accomplished, a recommendation to take into review the laws which impose civil disabilities on Roman Catholics, and whether their removal can be effected consistently with the full and perfect security of our establishment in church and state.

(LORDS). Address in reply to the King's speech proposed by the Marquess of Salisbury and seconded by the Earl of Wicklow. Debate on the recommendation for the relief of the Catholics; the Duke of Wellington, in answer to a question, stated that a substantive proposition would be submitted to the House for the removal of all civil disabilities under which Catholics laboured. The Earl of Winchelsea and the Earl of Eldon expressed their determination to oppose the concession. The Earl Bathurst, the Marquesses of Downshire, Anglesea, and Lansdowne, and the Duke of Wellington spoke in support of the principle recommended in the speech from the throne; the Duke of Newcastle, Lord Redesdale and Lord Farnham against it. The address was carried unanimously.

(COMMONS). Lord Clive moved the address; which was seconded by Lord Corry; the former expressing his great satisfaction at the proposed measures relative to the Catholics, and his confidence in the ministry,—the latter avowing that, though anxious to promote anything tending to tranquillise his native country, he should watch the proceedings with a jealous eye; Mr. Bankes and Sir R. H. Inglis declared themselves adverse to any concessions, urged the necessity of the nature of the proposed measure being explicitly stated, and accused the ministry of inconsistency. Mr. Peel defended himself from this charge by replying that the necessity of a change had become so urgent that there was no longer any possibility of delaying it without endangering the peace and stability of the empire; and declined stating the details of the intended proceedings as the present was not the proper opportunity, but added that it was proposed to effect the removal of civil and political disabilities, subject to such regulations as might appear necessary. Mr. Brougham contended that it was unusual to ask for details at such a stage, and expressed his great gratification at the measure about to be submitted to them by the government, which he characterised as a more lasting, general, and valuable benefit to the country than Parliament had passed for the last century. The address was carried *nem. con.*

(COMMONS). Lord Clive having brought up the report on the ad-
Feb. dress, on the question that it be read, many members took the
6. opportunity of declaring their sentiments for or against the proposed emancipation of the Catholics.

(Lords). On the Earl of Aberdeen laying the convention with
Feb. Spain on the table, Lord Holland inquired as to the intentions of
9. ministers with regard to Portugal, and alluded to the recent commission of hostilities against the unarmed subjects of the recognized queen, Donna Maria. Lord Aberdeen replied that as negociations were then pending, it would be improper to enter into any explanation, and with respect to the affair off Terceira he was fully prepared to show that what was done was not only just and proper but indispensable.

(Commons). Motion of Mr. Peel for leave to bring in a Bill for
Feb. the Suppression of Dangerous Associations or Assemblies in Ireland,
10. granting to the Lord Lieutenant the power of suppressing any meeting which he may think dangerous, and of delegating such authority to two selected magistrates. The measure was grounded on the undue influence and vast authority exercised by the Catholic Association, and he urged the propriety of that body being suppressed before any measures were taken for the removal of the existing disabilities of the Catholics. Lord Althorp and Mr. Stanley would have opposed this motion if it had been isolated, but coming in connection with the proposed removal of the grievances of Ireland, they were willing to consent to its introduction. Mr. Bankes thought there was no doubt that the Association ought to be suppressed; but contended that the government enjoyed sufficient powers for that purpose already, and highly blamed the ministry, particularly the legal officers of the Irish government, for not exerting those powers to prevent the continuance of such meetings, which he had no doubt were illegal. Mr. Doherty (Solicitor General for Ireland) asserted that himself and the Attorney General for Ireland had watched the proceedings of the Catholic Association with the strictest vigilance, and it was considered by themselves and the government, under different administrations, that a prosecution would be inexpedient from the difficulty of framing an indictment against seven millions of people, and that an abortive attempt would only have produced additional irritation. Motion agreed to.

(Commons). Mr. Secretary Peel moved the second reading of the
Feb. Dangerous Association Suppression Bill. Mr. Hobhouse objected
12. that what was called a bill for the suppression of the Catholic Association was to become a permanent act of parliament. Mr. Secretary Peel explained that the first clause of the Bill suppressed perpetually the Catholic Association, but that the other provisions of the bill were temporary; the operation of the act being limited to two years. Mr. Brougham declared his intention to support this bill, but only as the precursor of the one for Catholic emancipation, and as likely not to be carried into operation, as he had no doubt that the Catholic Association would dissolve of itself on the first annunciation of the proposed measure for their relief. The Bill was read a second time.

(Commons). In a Committee of Supply the sums of 28,046,800*l.*,
Feb. to pay off outstanding Exchequer Bills, 392,000*l.*, to pay off Exche-
13. quer Bills issued for carrying on public works and fisheries, and for building churches, and 4,600,000*l.*, on account of unappropriated grants of previous years, were severally granted.

Feb. (Commons). The report of the Committee of Supply brought up
16. and agreed to. The Catholic Association Suppression Bill passed through a committee.

Feb. (Lords). Catholic Association Suppression Bill brought up from
17. Commons, and read a first time.

Feb. (Commons). Bill for Suppression of Catholic Association read
17. a third time and passed.

Feb. (Commons). Mr. P. Macqueen brought in a bill to repeal so
18. much of any acts relating to the relief or settlement of the poor as confers settlement by hiring or service, which was read a first time.

Feb. (Lords). The Catholic Association Suppression Bill read a
19. second time and committed.

Feb. 20. (Lords). The Associations Suppression Bill passed through a committee with only a verbal amendment.

Feb. 20. (Commons). Committee of the House on the Army Estimates, the items of which were agreed to after considerable discussion, in the course of which Mr. Maberley expressed his dissatisfaction that the Finance Committee was not to be re-appointed.

Feb. 23. (Commons). The Chancellor of the Exchequer having moved that the report of the Committee of Supply be brought up, Mr. O'Neil inquired whether any arrangement had been made for the abandonment of the settlement of Sierra Leone, Sir George Murray replied, that the expenses of the colony were being reduced in order to pave the way for its abandonment at some future period. Resolutions were then agreed to, that land-forces, not exceeding 89,723 men, be maintained for the United Kingdom, and that the different sums included in the items of army supply be granted, amounting to 6,312,075*l.* 6*s.* The Chancellor of the Exchequer, in a Committee of the whole House to take into consideration the Acts relating to the granting of Life Annuities, moved a resolution to authorize the granting of annuities by the Commissioners for the Reduction of the National Debt upon a more just and accurate basis than in the acts repealed in the last session, extending the principle, and giving power to the Commissioners to grant annuities for periods of years, on terms specified in new and far more accurate tables, (which had been prepared) than those which formed the bases of the late acts. Agreed to.

Feb. 24. (Lords). The Associations Suppression Bill was read a third time and passed.

Feb. 24. (Commons). Debate on the motion of Mr. Slaney, for a bill to amend the law respecting the payment of able-bodied men from the poor's-rates; in which he stated it was proposed to return gradually to the true principles of law on this subject; that is, to abolish all money allowance to such persons whilst in employment; and he contended that the effect would be to raise the rate of wages to the provident and industrious, without which no permanent benefit could ever accrue to the humbler classes. Leave given to bring in the bill.

Feb. 26. (Commons). Mr. Brownlow moved for leave to bring in a bill for the draining of bogs, and the improvement of lands in Ireland; asserting that it had been ascertained that there were upwards of 3,000,000 acres of waste land in that country, capable of reclamation at a small expense; and he proposed that a commission of gentlemen should be appointed to authorize and enforce the improvements, as public sewers and drains were as necessary as public roads. Mr. Leslie Foster suggested the substitution of two engineers for the commission of gentlemen. Leave given.

Feb. 27. (Commons). Mr. Stuart Wortley brought up the bill to authorize the sale of game, and to alter the qualification for taking and killing game in England; read a first time. Sir George Clerk, in a Committee of Supply submitted the Navy Estimates for the year, in which he stated there was a considerable reduction as compared with the last year, notwithstanding the force to be kept up was to be the same in numerical amount; the saving, amounting to upwards of 100,000*l.*, being effected by reductions in the civil branches, and he moved resolutions that 30,000 men, including 9,000 marines, be employed; and that 5,878,794*l.*, in various items, be granted for the naval service, which were agreed to. Life Annuities Bill read a first time.

March 2. (Commons). Mr. Perceval submitted the Ordnance Estimates in a Committee of Supply, which passed.

March 3. (Commons). Resolutions of Committees of Supply and Ways and Means reported and agreed to.

March 5. (Lords). Associations Suppression Bill received the Royal Assent by commission.

March 5. (COMMONS). Debate on the Catholic Relief Bills. Mr. Secretary Peel, on moving that the House do resolve itself into a committee to consider of the laws imposing civil disabilities on his Majesty's Roman Catholic subjects, gave the following outline of the intended measures; by the first bill it was proposed that the Roman Catholic peer, and the Roman Catholic gentleman when elected, should be qualified to take their places as members of both Houses, on the same footing with Protestant members, without any restrictions as to number or privilege; to substitute an oath to be taken by every Protestant member of the legislature, and to which every Roman Catholic member will be expected to subscribe; to repeal the declaration against transubstantiation as far as regards admission to Parliament and to office generally; to relieve Roman Catholics from the oath of supremacy, leaving it, however, to be still taken by Protestants; and to substitute an oath which will relieve the Roman Catholic from the necessity of taking the oaths of allegiance and abjuration; to exclude them only from the offices of Lord Lieutenant of Ireland, of Lord Chancellor, or Lord Keeper, or Lord Commissioner of the Great Seal of Great Britain; and from all places or offices in, or having jurisdiction over, the Protestant Church or ecclesiastical foundations; to retain the law relative to the right of presentation to livings; to transfer to a commission any such patronage attached to an office held by a Roman Catholic; and to enact that it shall not be lawful for any Roman Catholic in office to advise the Crown relative to the appointment of any dignitary in the Established Church. The second bill respected the state of the elective franchise, and he said was highly necessary for the improvement of the moral condition of Ireland; he, in this case, confined himself to a statement of the general principles only, which were to limit the franchise to the holder of a *bonâ fide* freehold of not less than ten pounds a-year; not to interfere with the nature of tenures in that country. Adjourned.

March 6. (COMMONS). Report of the Committee that D. O'Connell, Esq. is duly elected a member for Clare. Adjourned debate on the Catholic Relief Bills. On the division the numbers were for going into the committee, 348; against it, 160; majority, 188.

March 9. (COMMONS). Motion for leave to bring in a bill to regulate the qualifications of persons entitled to vote for knights of the shire in Ireland, agreed to.

March 10. (COMMONS). The Catholic Relief Bill, and the Qualification of Freeholders Bill, were brought in and read a first time.

March 12. (COMMONS). Mr. E. Davenport moved for leave to bring in a bill empowering the summary conviction of juvenile offenders for petty crimes, in order to avoid the contamination produced by committing them for trial to a gaol. Leave given; as was also for a bill to legalize and regulate the supply of subjects for anatomy.

March 16. (COMMONS). Game Laws Amendment Bill read a second time. Mr. Secretary Peel introduced a bill to suspend for a limited period the making of lists and ballotting for the militia of the United Kingdom; and to authorize certain reductions in the staff.

March 17. (COMMONS). Bill to consolidate the laws relating to benefit societies, read a first time. Debate on the second reading of the Catholic Relief Bill, which was adjourned.

March 18. (COMMONS). Resumed debate on the Catholic Relief Bill; division, Ayes, 353; Noes, 173; Majority for the second reading, 180.

March 19. (COMMONS). Debate on the second reading of the Qualification of Freeholders (Ireland) Bill; division, Ayes, 223; Noes, 17; Majority, 206. Militia Suspension Bill read a second time.

March 20. (COMMONS). On the motion for the committal of the Qualification of Freeholders Bill, Viscount Duncannon proposed that the Committee be instructed to render the bill applicable to a

due exercise of the elective franchise by forty-shilling freeholders, by preventing fictitious registry; and to preserve the right of voting as at present by law established; after a debate thereupon, a division took place, for the Amendment 20; against it, 220; majority, 200.

March 23. (Commons). Discussion in Committee on the Roman Catholic Relief Bill. Various amendments were proposed. Mr. Secretary Peel moved that the words, "So help me God," be added to the declaration, converting it into an oath, which was agreed to.

March 24. (Lords). The Marquis of Londonderry requested to know whether there would be any objection to the appointment of a committee to take into consideration the state of the Coal Trade, with a view to the removal of the very unjust and oppressive taxes and imposts under which it at present labours, and to remove the unjustifiable charges imposed on the poor in London on this essential necessary of life. The Duke of Wellington saw no objection to entering into an inquiry into the system; he was convinced, however, that neither the duty levied by Government, nor by the City of London, was the cause of the great difference in the price of coals at the pit and in the metropolis.

March 24. (Commons). In answer to a question by a member, the Chancellor of the Exchequer said, that the act allowing a composition of assessed taxes would expire in April in 1830, and that it had been his intention to have brought in a bill for the improvement and consolidation of the laws relating to them, but the complicated nature of the measure had prevented him; he should therefore introduce a bill to continue the existing act for one year longer, in order that the whole subject might be fully considered in the next session. In the resumed Committee on the Catholic Relief Bill, Mr. Robert Dundas moved the omission of the clause extending the measure to Scotland, as being contrary to the Act of Union, and the Committee divided; for the omission, 45; against it, 158. The Marquess of Chandos proposed, as an addition to the excepted offices, that of First Lord Commissioner of his Majesty's Treasury, upon which also the Committee divided, for the Amendment, 98; against it, 218. Sir E. Knatchbull moved, that members of the Privy Council; and Mr. Moore, that governors, &c. of colonies, be excepted; both of which were negatived without a division. In the clause excluding Roman Catholics from any office in the ecclesiastical courts of judicature, and from any of the universities and any college of ecclesiastical foundation, Colonel Sibthorp moved the insertion of the word Protestant before ecclesiastical, which was negatived. Mr. Secretary Peel proposed an amendment that in case of office being held by a Catholic to which any ecclesiastical patronage belonged, the right of presentation should devolve on the Archbishop of Canterbury instead of being lodged in a commission, which was agreed to; as was also the insertion of a clause regulating the time and penalties on the oaths to be taken by Roman Catholic Members of Parliament, and a clause enacting that no person in holy orders of the church of Rome should be capable of being elected a Member of Parliament, after which the House resumed, and the report was brought up.

March 25. (Commons). Mr. Secretary Peel introduced a bill to consolidate the laws relating to the qualification and jurisdiction of justices of the peace for counties; read a first time.

March 26. (Lords). Committee appointed to inquire into the state of the coal trade.

March 26. (Commons). On the motion that the Qualification of Freeholders Bill be recommitted, Mr. Moore moved that it be an instruction to the Committee to extend the operation of the bill to boroughs and cities and towns corporate in Ireland; and that the existing rights of Protestant freeholders be preserved, both of which were negatived without a division. In the Committee Mr. Moore pro-

prosed that the qualification should be twenty pounds instead of ten; on a division there were, for the original Clause, 112; for the Amendment, 16. Bill agreed to and ordered to be reported.

March 27. (Commons). Report on the Catholic Relief Bill further considered. The House divided on the question that the Bill be engrossed—Ayes 233, Noes 106.

March 30. (Commons). Debate and division on the third reading of the Catholic Relief Bill—Ayes 320, Noes 142. Some verbal amendments being agreed to the bill was passed; as was also the Qualification of Freeholders Bill.

March 31. (Lords). The Catholic Relief Bill and Qualification of Freeholders Bill were read a first time.

March 31. (Commons). Lord Lowther brought in a bill for consolidating the trusts of the several turnpike roads north of the river Thames.

Apr. 2. (Lords). Debate on the Catholic Relief Bill, adjourned.

Apr. 3. (Lords). Debate on second reading of Catholic Relief Bill continued, and again adjourned.

Apr. 4. (Lords). Debate on Catholic Relief Bill resumed, and division thereon;—for the second reading, 217; against it, 112.

Apr. 6. (Lords). On the motion for the second reading of the Qualification of Freeholders Bill, an amendment was moved that it be read a second time that day six months, upon which a division took place; for the amendment 17; against it 139.

Apr. 6. (Commons). Bill to authorise the sale of game, &c. considered in Committee.

Apr. 7. (Lords). Committee on the Catholic Relief Bill. Various amendments were proposed, all of which were negatived. Lord Kenyon moved an adjournment, when the House divided; not content, 113; content, 14; majority against the adjournment, 99; but Lord Rolle declaring his intention to divide the House on every clause, an adjournment was agreed to.

Apr. 8. (Lords). Consideration of the Catholic Relief Bill was resumed in the Committee, when various amendments, having been discussed, were withdrawn, or negatived. The House resumed, and the report was received.

Apr. 8. (Commons). Mr. Sugden moved for leave to bring in Bills for consolidating and amending the laws for facilitating the payment of debts out of real estates; for amending the laws respecting conveyances and transfers of estates and funds vested in trustees, &c. for consolidating and amending the laws relating to property belonging to infants, lunatics, &c.; and to alter and amend the law relating to illusory appointments. Leave given.

Apr. 9. (Lords). Qualification of Freeholders Bill discussed in Committee, in which the Duke of Richmond proposed two amendments, the first excepting from the operation of the bill all existing *bonâ fide* forty-shilling freeholders; the other to except those forty-shilling freeholders who held in fee simple; the first negatived without a division, and the second by a majority of 66 to 12. Lord Farnham moved the extension of the provisions of the act to cities and boroughs, as well as counties, and the associating two or more magistrates with the assistant barrister appointed for the registry; both negatived. The bill was then reported without amendment; two amendments moved on report being received and both negatived.

Apr. 9. (Commons). Motion of Mr. Lennard for a Committee to be appointed to inquire into the present state of the laws relating to granting letters patent; agreed to, and Committee appointed. Metropolis Roads Bill read a second time.

Apr. 10 (Lords). Debate on the Catholic Relief Bill, and division,—for the third reading, 213; against it, 104. Read and passed. The Qualification of Freeholders Bill also read a third time and passed.

Apr. 13. (Lords). The Catholic Relief, Qualifications of Freeholders, Militia Suspension, and Annual Indemnity Bills received the royal assent by commission.

Apr. 13. (Commons). Debate on the motion that a Select Committee be appointed to inquire into the state of the silk trade; adjourned.

Apr. 14. (Commons). Debate on the motion for a Committee on the silk trade resumed; and motion negatived on a division by 149 against 31. Game Laws Bill read a third time and passed.

Apr. 15. (Commons). Mr. Secretary Peel introduced a bill for the improvement of the police of the metropolis, and moved the re-appointment of the Select Committee of last session on that subject, which was agreed to.

Apr. 28. (Lords). The Duke of Norfolk, Lord Dormer, and Lord Clifford, Roman Catholic peers, took the oaths appointed by the late act, and their seats.

Apr. 28. (Commons). Motion by Mr. Hobhouse for a Select Committee to inquire into the general operation and effect of the laws and usages under which select and other vestries are constituted in England and Wales; Committee appointed.

May 4. (Lords). The Marquess of Anglesey moved an address for the copies of two letters relating to his Lordship's recall from Ireland, which was negatived after a speech from the Duke of Wellington.

May 4. (Commons). In answer to a question of Mr. Brougham as to the intentions of government respecting the measures to be adopted in consequence of the report of the Commissioners of Inquiry into the Courts of Law, Mr. Secretary Peel stated that he could not pledge himself to introduce any bill founded on the report this session, but acknowledged the advantages of embodying the recommendations in a bill at as early a period as possible. Mr. Hume inquired whether it was intended by government to dispose of the ground of the east wing of Somerset-house, for the purpose of erecting a college there, which was answered in the affirmative by the Chancellor of the Exchequer, on the condition of its being made uniform with the rest of the building.

May 5. (Commons). Motion by Mr. Tennyson that a bill be brought in to disfranchise the borough of East Retford, and transfer the representation to Birmingham, upon which the house divided; for the motion 111; against it 197.

May 6. (Commons). The Earl of Surrey, the first Catholic member under the new act, took the oaths and his seat for Horsham. Discussion on motion for leave to bring in a bill for the purpose of vacating the seats of persons accepting certain offices in India under the East India Company. Bill brought in.

May 7. (Commons). Mr. Stuart Wortley inquired whether any measure was in contemplation with regard to the supply of water to the metropolis. Mr. Secretary Peel replied that Government were not prepared to take any steps at present, but he thought that the companies enjoying the monopoly were bound to remedy the evils complained of; if they did not, he trusted some new company would start up and receive the encouragement it would deserve. Debate on the motion for a new writ for the borough of East Retford; motion withdrawn. Mr. V. Stuart moved a resolution that it was expedient to take into early consideration in the next session of parliament the condition of the poor of Ireland, with the view of introducing a modified system of poor laws, applicable to the peculiar circumstances of that country. Debate thereupon, and motion withdrawn, on the declaration from Mr. Peel that the condition of the poor of Ireland required and would receive consideration.

May 8. (Lords). The Lord Chancellor introduced a bill for facilitating the administration of justice in suits in equity; read a first time.

May 8. (Commons). The Chancellor of the Exchequer, on bringing forward the budget, congratulated the House on the increasing prosperity of the country as evinced in the improvement of the two

great branches of the revenue—the excise and the customs, in consequence of which the surplus revenue had exceeded the estimate upward of 2,000,000*l.*; while the expenditure had been below the estimate no less than 767,000*l.*; he stated, however, that in consequence of the deficient harvest, and other causes, he could not but anticipate a falling off in the coming year, but assured the House there should be no deficiency of exertion in keeping down the expenses of the real service of the country, so as not to allow them to exceed the limits within which they might safely be confined; he explained the nature and effect of the Life Annuities Bill in progress through the House, and concluded by stating that the amount of supplies for the year was 18,404,853*l.*;—of the ways and means, 18,386,212*l.* The Silk Trade Bill was read a third time and passed.

May 11. (Lords). Debate on the Bill for authorising the Sale of Game, and division,—for the second reading, 79: against it, 69.

May 11. (Commons). Debate on bringing up the Ways and Means Report, and resolutions agreed to. The bills respecting the property in infants, illusory appointments, liability of real property, and lunatics' property, were read a third time and passed.

May 12. (Lords). Suits in Equity Bill read a second time.

May 12. (Commons). Motion of Mr. Slaney for a Committee to inquire into the burdens and restrictions on the manufacture of malt and beer, and on the supply of liquor to the poorer classes. The Chancellor of the Exchequer assuring the House that the attention of Government had been and should be directed to the possibility of relieving the different branches from any unnecessary restrictions, the motion was withdrawn. Sir John Nicholl introduced a bill to regulate the Duties and Emolument of the Officers, &c. of certain Ecclesiastical Courts in England, agreeably to the recommendation of a former commission. Mr. C. Pallmer moved for leave to bring in a bill to prevent the practice of bull-baiting, which was opposed on the ground of being too confined in its application,—for the motion, 28; against it, 73. In a Committee on the Land Revenue Bill, Lord Lowther stated that the expense of the new Palace up to the 14th Feb. had been 346,000*l.*, and the last estimate was 432,000*l.*

May 13. (Commons). Mr. Western moved for leave to bring in a Bill explanatory of the Act for exempting Husbandry Horses from Taxation. The Chancellor of the Exchequer declaring it to be his intention to bring in a bill for the consolidation and amending of the acts relating to the assessed taxes, when the subject could be better attended to, the motion was withdrawn.

May 14. (Commons). Debate on the motion of Mr. W. Whitmore for a Select Committee to inquire into the State of the Trade between Great Britain, the East Indies, and China; the motion was opposed by the Chancellor of the Exchequer, in order to await a more full and perfect inquiry in the next Session of Parliament. Motion withdrawn.

May 15. (Commons). Mr. O'Connell, member for Clare, being introduced for the purpose of taking his seat, the clerk tendered the oaths of allegiance, supremacy, and abjuration; Mr. O'Connell declined taking the oath of supremacy, and claimed to be allowed to take the oath set forth in the act passed in the present session for the relief of Roman Catholics. The Speaker said this was a course he did not conceive it his duty to acquiesce in, and directed him to withdraw. Motion of Mr. Brougham, that the member for Clare be called back and heard at the table. Debate thereon, adjourned. The Smithfield Market Improvement Bill was thrown out by a division of 54 against 31.

May 18. (Commons). Debate resumed on the question, that Mr. O'Connell be heard at the Table; amendment proposed that he be heard at the Bar, and carried in the affirmative; upon which Mr. O'Connell was called in, and proceeded to address the House in support of his claim to sit and vote as member for Clare. Upon his retiring, a motion was made by the Solicitor-General, that Mr. O'Connell, having

been returned before the passing of the late act, is not entitled to sit or vote unless he first takes the oath of supremacy, on which the House divided,—for the motion, 190; against it, 116. Question put and agreed to, that Mr. O'Connell do attend the House on the following day, and that the Speaker do communicate the above resolution, and inquire whether he will take the oath of supremacy. The Metropolis Roads Bill was read a third time and passed.

May 19. (Commons). Mr. O'Connell having appeared at the Bar, was informed by the Speaker of the foregoing resolution, and asked whether he would take the oath of supremacy, which having refused to do, he was desired to withdraw. The Solicitor-General then moved that a new writ be issued for Clare in the room of Daniel O'Connell, Esq. Debate thereon adjourned. Debate on the motion of Mr. Hume for a Committee of the whole House, to take into consideration the Corn Laws of the 9th Geo. IV. c. 60, with a view of substituting a fixed duty instead of the present graduated scale. The House divided,—for the motion, 12; against it, 154. The Friendly Societies and Anatomy Regulation Bills were read a third time and passed.

May 21. (Lords). The Suitors in Equity Bill read a third time and passed.

May 21. (Commons). Debate resumed on the question that a new writ be issued for Clare. Mr. S. Rice moved, as an amendment, that leave be given to bring in a Bill to amend the Act for the Relief of Catholics recently passed; amendment withdrawn, and original motion carried without a division. Debate on the motion of the Chancellor of the Exchequer to increase the salaries of the Scottish Judges, motion withdrawn.

May 22. (Lords). Debate on petition from the City of London, praying to be heard at the Bar against the order of the House for the production of the account of the income and expenditure of the Corporation. The debate was adjourned.

May 22. (Commons). In a Committee of Supply on the Irish education estimates, the House was divided on the grant of 8928*l.* to Maynooth College, which was agreed to by a majority of 118 to 14. Mr. Slaney gave notice that the Labourers' Wages Bill would be withdrawn till the next session. The Exchequer Bills Funding Bill and Sinking Funds Bill were read a third time and passed.

May 25. (Lords). Discussion on motion that the City of London be heard by counsel against the order of the House to produce accounts of their income and expenditure, resumed; counsel called in and heard against the order; order for the returns confirmed.

May 25. (Commons). Debate in the Committee on the Sugar Duties Bill, on the motion of Mr. C. Grant to reduce the duties, upon which the Committee divided,—for the motion, 60; against it, 98. The Metropolis Police Bill was read a third time and passed. In a Committee on the Land Revenue Bill, Colonel Davies brought forward some charges against Mr. Nash, the architect, and gave notice of his intention to move for a Select Committee to inquire into the expenses of Buckingham Palace, and the manner in which Crown leases were granted. The Chancellor of the Exchequer moved that there be added to the bill a clause restricting the expense of Buckingham Palace to 150,000*l.* beyond what had been already voted. Mr. Bankes proposed to reduce that sum by 34,450*l.* being the sum to be expended upon the sculpture of the arch, which amendment was negatived by 91 to 61, and the original motion agreed to.

May 26. (Lords). The Duke of Richmond moved a series of resolutions declaratory of the depressed state of the wool-trade, and of the expediency of taking the subject into Parliamentary consideration. Debate, and division thereon. Content, 35; not-content, 88.

May 27. (Commons). Debate on the motion of Colonel Davies for a committee to inquire into the conduct of Mr. Nash, respecting the

granting of leases or the sale of Crown lands in Suffolk-street, Pall-Mall East, &c.; motion agreed to, and Committee appointed.

May 28. (Lords). Lord Wharncliffe proposed certain resolutions for regulating proceedings in private bills, which were agreed to.

May 28. (Commons). Police Magistrates Bill read a second time.

June 1. (Lords). Sale of Game Bill thrown out by a division of 91 against 89.

June 1. (Commons). Debate on the motion of Sir J. Mackintosh for an address for papers connected with the affairs of Portugal, and of the instructions to the naval officer who prevented the landing of the emigrants at Terceira. Mr. Secretary Peel entered into a justification of the conduct of the Government concerning the affairs of Portugal generally, and had no objection to the production of the papers, which were ordered.

June 2. (Lords). The Draining of Bogs in Ireland Bill postponed till next session.

June 3. (Commons). Resolutions proposed by the Marquess of Blandford declaratory of the existence of boroughs in which the returns of members are notoriously capable of being purchased; and that the existence of such boroughs, and the continuance of such practices, are disgraceful to the character of the House, destructive of the confidence of the people, and prejudicial to the best interests of the country; upon which the House divided, for the adoption of the resolutions 40, against them 114. Debate on the motion of Mr. H. Fane, that a writ be issued for the election of Burgesses of the Borough of East Retford; negatived on a division by a majority of 135 against 44.

June 3. (Commons). Discussion on the motion of Mr. F. Buxton for the production of a series of papers connected with the Slave Trade in the West India Islands and in the Mauritius; Sir R. Farquhar explained and defended his conduct in the latter colony; papers ordered.

June 4 (Commons). Debate on the State of the Currency on presenting a petition from Birmingham.

June 5. (Lords). The Anatomy Bill read a second time, and further proceedings, after debate, postponed till next session.

June 5. (Commons). On the third reading of the Charities' Inquiry Bill Mr. Brougham detailed the proceedings of the Commissioners; they had completely examined sixteen counties, and partially examined ten; altogether amounting to more than 19,000 charities, being more than half the number in the whole kingdom: he trusted that next Session a bill would be introduced to divert the funds of many of the charities to more useful purposes than those to which they had been nominally devoted by their founders.

June 10. (Lords). Metropolis Police Bill read a third time and passed.

June 11. (Lords). Lord Goderich moved for certain returns connected with shipping and navigation, calculated to show the advantage derived to this country from the adoption of a system of reciprocity and free trade; ordered. The Metropolis Roads and Land Revenue Acts Consolidation Bills were read a third time and passed.

June 12. (Lords). Ecclesiastical Courts Bill read a third time and passed.

June 12. (Commons). Debate on the presenting a petition from Blackburn, Lancashire, complaining of the manufacturing distresses of the country.

June 19. (Lords). The Earl of Aberdeen presented papers respecting the relations between this country and Portugal, and debate thereon.

June 19. (Commons). Debate upon receiving the report of the committee appointed to investigate the charges against Mr. Nash.

June 24. His Majesty's speech delivered by the Lord Chancellor, thanking the Houses for their attention to the matters recommended to them at the opening of the session; informing them of the friendly relations with all foreign powers; lamenting the continu-

ance of the war in the East, but announcing the renewal of our diplomatic relations with the Porte, that our ambassador, and that of France, were on their way to Constantinople, and were authorised to act for Russia in the final pacification of Greece, and the withdrawal of the French army from the Morea; regretting the condition of the Portuguese monarchy, and expressing a determination to use every effort to remove the evils afflicting that country; thanking the Commons for the supplies granted, and assuring them of every attention being paid to economy; and expressing the sincere hope of his Majesty that the measures adopted during this session would establish the tranquillity and improve the condition of Ireland. The Parliament was then prorogued.

XXXII. NOTICES OF MOTIONS IN THE HOUSE OF COMMONS FOR THE SESSION 1830.

1 Mr. Nicholson Calvert—Bill to prevent Bribery and Corruption in East Retford.
2 Mr. Tennyson—Bill to exclude East Retford from electing Burgesses to serve in Parliament, and to enable Birmingham to return two Representatives in lieu thereof.
3 Mr. Robinson—Select Committee to inquire into the State of Newfoundland and Labrador, with a view to amend the Laws relating to those Settlements.
4 Lord John Russell—Bill to enable Manchester, Leeds, and Birmingham to send Representatives to Parliament.
5 Mr. Sykes—To move for the Equalization of the Duty on Deals imported into this country from the different ports of the Baltic; and therefore to propose that the duty should be estimated by the cubic contents, instead of their present complicated, imperfect, and partial standard.
6 Marquess of Blandford—To move for a Committee to inquire into the causes why the people are not represented in this House according to the spirit of the Constitution; or to bring forward some specific measure to restore the purity of representation.
7 Sir James Mackintosh—Bill for the relief of Mr. O'Reilly, and other sufferers by the insolvency of the Registrar of the Court at Madras.
8 Dr. Phillimore—Bill to alter and amend the Ecclesiastical Jurisdiction exercised in the several County Courts throughout England and Wales.
9 Mr. W. Stewart (of Beverley)—Select Committee, to inquire into the Revenue, Expenditure, and Commerce of Ceylon.
10 Mr. Sibthorp,—Bill for the Regulation of the Posting throughout Great Britain, and placing it on some regular system.
11 Mr. Bright—Select Committee on the State and Management of the River Thames above London Bridge, in relation to its internal navigation.
12 Sir Henry Parnell—Select Committee to inquire into the best means of taking a Census of the Population of the United Kingdom.
13 Mr. Charles Pallmer—Address for the appointment of a Commission to inquire into the Jurisdiction and Practice of the Lords of the Privy Council, in respect to Appeals from the West India Colonies, and the Acts of Colonial Legislatures.
14 Mr. Harvey—Bill to render all processes issuing out of the Superior Courts of Record at Westminster or Dublin, operative in any County or Place in the United Kingdom.
15 Mr. Stanley—Bill to amend the Laws respecting the Leasing Powers of Bishops and Ecclesiastical Corporations in Ireland.
16 Mr. P. Thomson—Bill to allow the formation of Partnerships in Commandite.
17 Mr. Greene—Bill to enable the Incumbents of Livings in England and

Wales, to commute their Tithes, by agreement, with the owners of land within their respective parishes.

18 Mr. Lennard—Bill to repeal the Third and Fourth Clauses of the Act 10 Geo. II. c. 28, which empowers the Lord Chamberlain to prohibit the acting of any new play or entertainment on the stage.

19 Marquess of Chandos—Bill to make certain alterations in the Game Laws.

20 Dr. Lushington—Bill to declare that all Slaves brought to Great Britain shall thereafter be free in all British Dominions.

21 Mr. Slaney—Bill to declare and amend that part of the Poor Law relating to the employment and relief of able-bodied persons, and for the better rating tenements which are under a certain annual value.

22 Mr. Sadler—To introduce Measures with a view to bettering the condition of the Labouring Poor.

23 Mr. Otway Cave—To move a Resolution that Children born of Slaves in the West Indies after 1830 be deemed free.

24 Colonel Davies—Motion relative to Secondary Punishments, by Transportation and Prison Discipline.

25 Colonel Davies—Consideration of the Report from the Committee on Crown Leases. (Conduct of Mr. Nash.)

26 Mr. George Lamb—Bill to alter and extend the provisions of the Acts 8th Anne, c. 19, 41st Geo. III. c. 107, and 54th Geo. III. c. 156, with respect to dramatic writings.

27 Mr. Harvey—To take into consideration the present state and actual value of all Crown Property, with a view to its beneficial disposition.

28 Mr. Edward Davenport—Motion on the Pressure upon the Commercial and Labouring Classes, produced by high Taxation levied in Money of increased value.

29 Mr. Edward Davenport—Motion on the Conduct of his Majesty's Government respecting Portuguese Affairs.

30 Mr. Warburton—Bill for regulating Schools of Anatomy.

31 Lord Nugent—Bill for establishing a Register of the Births of the Children of Dissenters.

32 Mr. Ewart—Select Committee to inquire into the State of the Courts of Law, (particularly the King's Bench,) for the purpose of ascertaining whether they might not be easily and cheaply altered, for the better accommodation of the public and of the professional persons who practise in the said Courts.

33 Mr. Cholmeley—Motion for the repeal of the Act prohibiting the growth of Tobacco in the United Kingdom.

34 Mr. Cholmeley—Motion for amending the Representation of such Boroughs as do not contain more than ten voters.

XXXIII. PRIVATE BILLS OF THE SESSION OF PARLIAMENT, 1829.

In the Companions for 1828 and 1829 we gave abstracts of the "List of Petitions and Private Bills in Parliament." We continue to analyse this alphabetical enumeration, comparing it with the same list for former years; for it furnishes a striking proof of the resources of the country, and exhibits the steady progress of those improvements which advance the prosperity and convenience of the whole people. We have added, in many cases, the particular objects of the more important Bills, as we collect them from a work which affords valuable information on all Legislative Pro-

ceedings, particularly on Private Bills,—"The Mirror of Parliament."

I.—Numerical Abstract of the List of Petitions and Private Bills for the Session of 1829.

Petitions presented	254
Bills read first time	233
Bills read second time	221
Bills read third time	208
Bills which received the royal assent	205

II.—Comparative Classification of Private Bills for Five Years.

BILLS PASSED.	1825.	1826.	1827.	1828.	1829.
Agriculture	28	24	26	19	26
Companies	11	6	5	2	6
Improvement of Towns and Districts	73	47	39	39	42
Internal Communication	108	83	63	83	83
Navigation	15	4	7	6	5
Private Regulation	51	42	45	33	45
Total	286	206	185	182	207

III.—Abstract of Petitions and Private Bills in Parliament, Session 1829.

CLASS.	Petitions.	Passed.	Not Passed.
I.—Agriculture.			
1. Inclosures	34	24	10
2. Draining	2	—	2
3. Tithes	1	1	—
II.—Companies.			
1. Gas Light and Coke	10	5	5
2. West India Dock	1	1	—
III.—Improvements of Towns and Districts.			
1. General Improvements	18	12	6
2. Churches, Chapels, Markets, Bridges, Gaols, &c.	21	16	5
3. Local Water Works	3	3	—
4. Local Gas Works	2	—	2
5. Municipal Regulations	17	11	6
IV.—Internal Communication.			
1. Roads	71	64	7
2. Canals	6	4	2
3. Improvement of Rivers	6	6	—
4. Railways	10	9	1
V.—Navigation.			
1. Harbours	2	2	—
2. Docks	1	1	—
3. Pier, Embankment, &c.	2	2	—
VI.—Private Regulations.			
Estates, Divorces, Naturalization, &c.	47	45	2
Total	254	206	48

I. Of the twenty-four *Inclosure* bills which were enacted during the last session of parliament, twenty-three belonged to England and one to Ireland. The English inclosure bills are divided as follow,—Cambridge one, Cumberland one, Derby one, Devon one, Dorset one, Essex one, Gloucester two,

Hants five, Norfolk three, Northampton two, Oxon one, Shropshire one, Somerset one, Suffolk one, York one. The Irish inclosure bill is in the county of Kilkenny, and we hail with satisfaction even a solitary attempt to improve the natural agricultural advantages of this portion of the empire.

II. Of the ten Bills brought into Parliament relating to Gas Companies, five have passed into law; viz.

British Gas Light (Second Bill).
Edinburgh Gas Light.
Hibernian Gas Light.
Imperial Gas Light and Coke.
Independent Gas Light.

The British Gas Light Bill was for the incorporation of a new company, under that name, and for enabling them more effectually to light with gas certain parts of the City of London and Counties of Middlesex and Essex. The Bill received considerable opposition. The Edinburgh Gas Light Bill was also opposed before the Committee. The Hibernian Gas Light Bill was for altering, amending, and enlarging the powers of the company: and the Imperial Gas Light for altering and amending two former acts. The Independent Gas Light and Coke Bill was for the incorporation of a new company, and for enabling them more effectually to light parts of the City of London and County of Middlesex. This Bill was also opposed.

The West India Dock Bill was for enabling the Company to raise a further sum of money.

III. The Bills for the General Improvements of Towns and Districts, which passed into law, are as follow:—

Aberdeen—Lighting, Cleansing, Watching, Improving the Streets, and Supplying with Water.
Clerkenwell—Amendment of former acts.
Croydon—Lighting, Watching, and Improving; and Providing Lodgings for the Judges.
Duddeston (near Birmingham)—Lighting, &c.
Kington (Hereford)—Lighting, &c.
Lambeth (Waterloo and original parish church districts)—Watching, Lighting, Cleansing, and otherwise Improving.
Lynn—Supplying the Inhabitants with Water, and for other Local Improvements.
Ryde—Paving, &c., and Establishing a Market.
St. George's, Southwark—Improving Roads and Streets, Lighting and Watching.
Sheerness—Improving Streets, Paving, &c.
Southend—Making and maintaining a Pier, and other Improvements.
South Shields—Paving, Lighting, &c.

The Bills passed for *particular local improvements* are as follow:—

Basingstoke—Enlarging Market-Place, and Building new Town Hall.
Glasgow—Rebuilding the Bridge over the Clyde opposite Jamaica Street.
Liverpool—St. Catherine's Church.
——————St. Martin's Church.
——————Blind School (Regulation).
London—Bridge, to amend the Act for Rebuilding.
Marlow—Rebuilding Bridge (Suspension).
Monmouth—Rebuilding County-Hall.
Morpeth—Repairing Bridge.
Newry—Church.
St. Alban's—Rebuilding Court-House.
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3. Local Water Works	3	3	—
4. Local Gas Works	2	—	2
5. Municipal Regulations	17	11	6
IV.—Internal Communication.			
1. Roads	71	64	7
2. Canals	6	4	2
3. Improvement of Rivers	6	6	—
4. Railways	10	9	1
V.—Navigation.			
1. Harbours	2	2	—
2. Docks	1	1	—
3. Pier, Embankment, &c.	2	2	—
VI.—Private Regulations.			
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Duddeston (near Birmingham)—Lighting, &c.
Kington (Hereford)—Lighting, &c.
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Lynn—Supplying the Inhabitants with Water, and for other Local Improvements.
Ryde—Paving, &c., and Establishing a Market.
St. George's, Southwark—Improving Roads and Streets, Lighting and Watching.
Sheerness—Improving Streets, Paving, &c.
Southend—Making and maintaining a Pier, and other Improvements.
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———— St. Martin's Church.
———— Blind School (Regulation).
London—Bridge, to amend the Act for Rebuilding.
Marlow—Rebuilding Bridge (Suspension).
Monmouth—Rebuilding County-Hall.
Morpeth—Repairing Bridge.
Newry—Church.
St. Alban's—Rebuilding Court-House.
St. Dunstan's—Rebuilding Church.

St. Saviour's, Southwark—Rebuilding Market.
Sandwich—Regulating Jail.
Staines—Rebuilding Bridge.

The three Bills for Local *Water Works* apply to East London (enlarging powers), Perth, and Shrewsbury (amendment).

The eleven Bills for *Municipal Regulation* are chiefly with relation to the management of the poor. Amongst the most important is that for the regulation of the Vestry of St. Paul, Covent Garden.

IV. In the late Session of Parliament sixty-four new *Road Bills* have passed into law. The course of improvement in this important department of communication is unceasing. The contrast which Great Britain thus presents to other countries is most striking.

The Bills for *Canals* are as follow:—

City—For the Sale of the Canal to the West India Dock Company.
Exeter—Improvement of Canal.
Ulster—Improvement of Canal.
Oxford—To amend former Act.

The six Bills for the improvement of the Navigation of *Rivers*, &c. are Kincardine (ferry), Nene Outfall (drainage), Newry, Shields (ferry), Weever, and Witham.

The system of Canal Navigation, it will be seen, has received no extension during the late Session of Parliament. Indeed one Canal (the City) has been abolished. This may partly be attributed to the great perfection of the existing Canals, and their extension over the country; and partly to the establishment of Railways. It is, however, more than probable that the one system of communication will not greatly interfere with the other. Nine Bills for *Railways* have passed during the late Session; but they are all for the improvement of existing Railways, or for extending the powers of the original Acts. These Bills are as follow:—

Clarence (Durham)—Improvement, by varying line, making new Branches, abandoning others, &c. &c.
Duffryn, Llynvi, and Porthcawl—Altering, amending, and enlarging powers of former Act.
Edinburgh and Dalkeith—Extension of the Railway.
Garturk and Garion—Improvement.
Kenyon and West Leigh—Improvement, by constructing an additional Branch.
Liverpool and Manchester—Amending the Act.
Newcastle and Carlisle—Improvement.
Saundersfoot—Improvement of Railway and Harbour.
Warrington and Newton—Improvement.

V. The Bills relating to *Navigation*, &c. are as follow:—

Aberdeen, Kirkcaldy } Improvement of the Harbour.

St. Katherine's—Extending powers of original Act for the establishment of Docks.
Sheerness—Improvement of Pier.
Wallasey—For making an Embankment in the townships of Wallasey and Great Meols, Cheshire, to prevent the further encroachments of the sea, and consequent injury to adjacent low lands and the Port of Liverpool.

When we subtract, from the whole number of Private Bills, those of Class VI. (PrivateRegulations) amounting to forty-five, we find that one hundred and sixty-one projects of improvement, more or less important, but all tending to advance the general welfare of the community, have been passed into law.

XXXIV. BRIEF NOTICE OF THE PROGRESS OF PUBLIC IMPROVEMENTS.

1. Churches.

The Ninth Annual Report of His Majesty's Commissioners appointed by virtue of the "Act for Building and promoting the Building of Additional Churches in populous Parishes," states that twenty-five churches and chapels have been completed since the last Report. On the whole, one hundred and nine churches and chapels have now been completed, making a total provision for 164,536 persons, including 91,391 free seats for the use of the poor. The Commissioners further report, that thirty-seven churches and chapels are building;—that plans have been approved, and tenders accepted for the works to be performed for thirteen other churches and chapels; that plans have been approved for twenty-two others; that fifteen plans are under consideration; and that they have proposed to make grants for eighteen other churches and chapels. Since the opening of the Commission they have determined on, and made provision for, the erection of two hundred and fourteen churches and chapels;—and the Exchequer Bills issued at the date of the Report (June 1829) amount to 1,260,100*l.* It appears from the Report (Schedule A), that of the thirty-seven churches in progress of erection, thirty-four are of the Gothic style, and three of the Grecian.

The "Society for promoting the enlargement, building, and repairing of churches and chapels," incorporated in 1818, has rendered material assistance by grants, to the extension of the number of places of worship; and the principle upon which all pecuniary assistance is afforded by them, that of securing a certain number of free seats, has rendered the accommodations to the humbler classes of society much more numerous than they formerly enjoyed. From the date of their establishment to that of their last Report, they have granted the loan of 130,550*l.* in aid to 653 parishes, and have secured 137,497 free seats.

2. Government Buildings.

New Post Office.—This recently finished-building is an insulated massive structure of large dimensions, being about 389 feet long, 130 wide, and 64 high, standing in an enclosed area of irregular figure, and of very scanty dimensions, at the junction of the street called St. Martin's-le-grand with Newgate-street, in a situation as central, and perhaps as convenient, to the metropolis as is possible. The edifice is externally of Portland stone. The principal front is on one of the longest sides of its quadrangular plan, and is to the West and St. Martin's-le-grand. The corresponding one stands in the same respect to the East and Foster Lane. The old buildings on the North have been taken down as far as to St. Ann's Lane, and it is presumed, that at least an equal area will be cleared to the South, by removing the few houses which still remain, and obstruct both the approach and view from Cheap-

side. The façade of St. Martin's-le-grand is the only one in which there is any architectural display, and this is confined to three porticos of the Ionic order, one at each end of four columns, and one in the centre of six, the last surmounted by a pediment. On the frieze over the columns is the inscription GEORGIO QUARTO REGE, MDCCCXXIX. The central portico is the only one which covers an entrance, and through it, after an ascent of a few steps, is the access to the Grand Public Hall of the establishment; it extends entirely across the building, and is entered from Foster-Lane at the other end. This Hall is eighty feet long, by about sixty feet wide, divided in the manner of the nave of a cathedral by Ionic colonnades into a centre and two aisles. The centre aisle rises to about fifty-three feet high, and admits of a dwarf or attic pilastrade over the principal order, the intervals of which are glazed for the admission of light. In the Northern aisle are the Inland, American Ship-letter and Newspaper offices: and at the Eastern end of it is a staircase leading to the Letter-bill, Dead, Mis-sent, and Returned Letter offices. In the Southern are the Foreign and Two-penny post departments, the offices of the Receiver General and Accountant, and the access to the Assistant-Secretary's official residence. North of the centre, and in the Eastern front, is the entrance or vestibule, where the bags are received from the mails. Communicating with this vestibule is the Inland office, 88 feet long, 56 wide, and 28 high; and adjoining to it is that of the letter-carriers, 103 feet long, 35 wide, and 33 high. The West Indian letters have an office appropriated expressly to them, which is on the Eastern or Foster-Lane side.* Near it are the Comptroller's and Mail-coach offices.

The communication between the departments in the Northern and Southern divisions of the building is maintained by a tunnel beneath the Great Hall, in which the letters from one department to another are conveyed by machinery, invented by Mr. Barrow. The Inland Office may be preserved of an equable and agreeable temperature at all times by a warm-air apparatus, designed and fixed by Mr. Sylvester.

On the first floor, are the Board-room, the Secretary's rooms, and the Secretary's Clerks' office. The Solicitors' offices, and those of the letter-bill, dead, mis-sent, and returned letters.

On the second and third stories are the sleeping-rooms for the clerks of the Foreign office, it being important, from the uncertainty of the time of arrival of the mails, that they should be always on the spot. The extent of the accommodation necessary for this purpose, may be estimated from the fact that all the rooms on each side of a gallery on one of these floors, two hundred and thirty feet long, are appropriated for this object.

In the basement, which is vaulted, and therefore fire-proof, are the mail-guards' room and armory, the servants' offices, the

* This office takes charge of the letters for the Continent of North America, as well as those for the Windward and Leeward Islands.

apparatus for warming, the patent gasometers by the Messrs. Crossleys, large enough to register four thousand cubic feet of gas per hour, and a governor, by Mr. Clegg, for regulating the supply of gas to nearly a thousand argand burners. The gas is supplied by the City of London Gas Company. The architect of the Post-office is Mr. Smirke.

When we regard the great extension of the communications between the metropolis and the most distant parts of the country—an increase to which the improvement of the system of the Post has most materially contributed—the necessity for the removal of this establishment from its former confined situation in Lombard Street, must be quite apparent. The New Post Office has been 14 years in completion, dating from the time of the passing of the Act in 1815; much of this period has been consumed in the purchase and removal of the houses which were crowded upon its site. During the latter part of this time (from 1825,) the business of the Post Office has gone on increasing, the gross receipt, in 1827, of the United Kingdom having been very nearly £2,392,272, and the payments into the Exchequer from this branch of revenue, after deducting all expenses of collection, having been 1,645,254*l.* During the Protectorate, when the Post Office was first farmed by the Government, its revenue was 10,000*l.*;—at the beginning of the eighteenth century it had reached 100,000*l.*;—in 1744 it had increased to 235,000; and at the beginning of the war in 1793 was above 600,000*l.* The Post is now conveyed, with despatch and punctuality, to almost every part of the kingdom;—and it is an extraordinary event for a traveller to be in any place so remote and so thinly peopled as to be out of the reach of this great agent in the advancement of civilization. The total number of persons employed in England, in the business of the Post Office, exceeds 4900, besides the private servants of the Deputy Postmasters.

The business of the London Post Office is very extensive and complicated. It is divided into,—the *Inland Office*, in which, according to a return of January last, there are 113 clerks and other persons ordinarily in attendance at the morning duty, and 119 at the evening duty;—the *Returned Letter Office*, in which there are an Inspector and 9 clerks;—the *Dead Letter Office*, in which there are an Inspector and assistant and 7 clerks;—the *Ship Letter Office*, in which there are an Inspector and 8 clerks;—the *Foreign Office*, in which there are a Comptroller and Deputy, and 16 Clerks and Sorters (the West India Office is included in this number); the *Letter Bill Office*, in which there are a Superintendant and 7 Clerks;—the *Bye Letter Office*, in which there are an Accountant and 4 Clerks; besides the offices of the Receiver General, the Accountant General, the Surveyor and Superintendent of Mail Coaches, and the Secretary, in which there are nearly 50 persons engaged in the general control of this important establishment. The expenses of the Post Office,—which in 1827, amounted to 27 per cent,—consist of the salaries to these various officers, the allowances to the Deputy Postmasters, the expenses of Receiving Houses in London, the mileage to the Mail-Coaches,

which amounts to 5*l.* 19*s.* 3½*d.* per double mile per annum; the expenses of mail-carts, horses, and foot messengers, and the salaries of the guards of mails;—and the cost of Packets, which, in 1827, amounted to 159,250*l.* It must be evident that for the management of this vast and complicated business, persons of trust and ability must be employed in every department; and that for the better performance of duties which require such order and promptitude, it is of the highest importance to provide a building offering every convenience of the most perfect arrangement.

The preceding statements of the general business of the Post Office establishment are abstracted from the eighteenth report of the Commissioners of Revenue Enquiry. This Report, which consists of nearly 700 folio pages, is full of the most curious and minute information, as to the mode in which this department of the revenue is managed, in all its branches. The evidence, particularly that of Sir Francis Freeling, the skilful and indefatigable Secretary of the Post Office, affords a very perfect account of the whole system of receiving, arranging, and despatching letters, of keeping the accounts, and of various other interesting divisions of this great national establishment. We regret that our limits preclude even an abstract of these interesting particulars. We subjoin, however, some details, which will furnish an idea of the present extent of the communication by Post in the metropolis.

The letters despatched from London through the Inland Office, are either put in at the General Post Office, or at the various Receiving Houses, collected by the Bellman, or transferred from the Two-penny Post Office. The Report furnishes an account of the proportions of each of these divisions of the general receipt, by giving the returns of three days, viz. Monday, the 24th, Tuesday, 25th, and Wednesday, 26th of November, 1828.

	Lombard Street.	Receiving houses.	Bellmen.	2d Post Office.
24th	17,623	11,604	9,722	5,199
25th	14,099	10,307	8,512	3,795
26th.	14,179	8,962	8,130	3,737

It was important also to shew the proportion of letters received from the districts east and west of Temple Bar, and despatched by the mail coaches, on three particular days. This account is given as follows:—

	East.	West.	Total.
Monday, May 19, 1828, . .	19,952	16,436	36,388
Wednesday, 21, . . .	15,880	15,215	31,095
Friday, 23, . . .	15,961	14,824	30,785
Daily average . . .	16,931	15,491	32,756

It would appear from this account, assuming the average of three days in May to be an average of the year, that there are despatched from London, by the mails, each week, 196,536 letters, making the total number of a year, 10,219,872. This account, however, is probably somewhat too high.

The accounts of the letters received in London, by the mails, are more minute; and they afford a curious and interesting view of

the principal points of correspondence to and from London. The following is the total number of letters brought by twenty-four mails, on three days, distinguishing their destination, either to the east or west of Temple Bar.

	East.	West.	Total.
Monday, May 19, 1828, . .	20,257	17,501	37,758
Wednesday, 21, ...	12,619	10,951	23,560
Friday, 23, ...	13,203	10,871	24,074
Daily average	15,359	13,107	28,467

We thus see, upon the same principle of a weekly and yearly average, that there are received in London, from the mails, each week, 170,802 letters; making the total number of a year, 8,881,704.

An average of the Return of Friday the 9th, and Saturday the 10th of May, gives the following number of letters, east and west of Temple Bar, from the undermentioned towns:—

	East.	West.	Total.
Liverpool . . .	406	146	552
Glasgow . .	244	105	349
Manchester . .	353	105	458
Birmingham . .	335	140	475
Leeds	191	55	246
Sheffield . . .	105	37	142
Bath	226	303	529
Cheltenham . .	100	132	232
Oxford . . .	117	155	272
Cambridge . .	145	149	294
Newmarket . .	30	68	98
York	80	72	152

The business of the Twopenny Post forms, in part, a branch of the General Post Office; the Returns afford us a remarkable proof of the convenience of this mode of conveying letters through the metropolis and its vicinity, by exhibiting the great extent of business which is thus transacted. It appears from these Returns that the average number of letters passing daily through the Twopenny Post Office (taking May as the period when the Returns were prepared) is 40,000. This account includes soldiers' and sailors' letters and newspapers, as well as those letters which are either delivered to or from the General Post Office by the Twopenny Post. The average proportion of letters charged 2*d.* to the letters which are charged 3*d.* is nearly in the ratio of five to three.

3. Palaces.

In the 'Companion' for 1829 we gave a somewhat minute account of the extensive repairs and improvements of *Windsor Castle.* The principal works that have been carried on during the present year, are, the increase of the height of the Round Tower, the completion of the garden and orangery on the east side, and the state apartments on the north side, which back upon St. George's hall. The hill on the southern side, without the walls of the Castle, has been considerably lowered. The foundation of the pedestal of a colossal statue of George III. was commenced on

the 12th August, at Snow Hill, being the southern extremity of the grand avenue, called the Long Walk, when his Majesty laid the first stone.

The works at the *King's Palace at Pimlico* are still proceeding. The triumphal arch, which is constructed of marble, and forms the entrance to the area upon which the palace stands, is nearly finished.

4. Metropolitan Street Improvements.

The extensive openings of narrow streets which are now carrying on in London, under the direction of the Commissioners of Woods and Forests, have, during the present year, produced the most striking alterations. The removal of Exeter Change, and the adjacent houses as far as Southampton Street, has effected one of the greatest improvements that can be imagined; offering a wide and handsome street, instead of the narrow and dangerous passages which opposed the progress of traffic in this great thoroughfare, emphatically called one of the arteries of London. Behind the houses in progress upon this site, a very spacious Hall is to be built, for the purpose of holding those general meetings which various Associations have hitherto usually convened in the Hall of Freemasons' Tavern. The Hall is to be 110 feet long and 76 feet wide, and will be approached by a handsome Bath-stone entrance and flight of steps facing the Strand. (See List of Charities.) A great number of houses have been taken down in the neighbourhood of St. Martin's Church, under the powers of the Act for the improvement of Charing Cross and the Strand.

5. Buildings connected with Science and Literature.

The progress of the works at the *London University* is unremitting. Of the exterior front, the portico and dome have been completed, as well as the flights of steps ascending to the portico. The façade of the portico consists of ten Grecian Corinthian columns.

The ground at the east of Somerset House is being cleared, for the erection of *King's College*, and an artificial foundation is in progress, similar to that which has already been used with success by Mr. Smirke in reconstructing the Custom House. It is understood that the style of this building is to preserve a general uniformity with that of Somerset House.

During the summer various new buildings have been erected in the gardens of the *Zoological Society;* and a tunnel is now forming beneath the road of the Regent's Park, to connect the present gardens with additional land which has been obtained for the extension of the interesting objects of the Society. The Society has also taken a farm at Kingston, for the prosecution of experiments in breeding and domestication.

The Athenæum Club-House, Waterloo Place, London, is so far completed as to be expected to be ready for the reception of the members early in the ensuing year. The distribution of the apartments of this building has been made by Decimus Burton, Esq and the design of the exterior has been executed under his directions, but modified by some arrangements between this club and

that of the United Service, which occupies the opposite and corresponding position. An entrance-hall, the principal staircase, general and private dining-rooms, and a news-room occupy the ground-floor. On the first is a drawing-room 100 feet by 30 feet, into which open the library and reading-room, &c. &c. The mezzanine and attic stories contain dressing-rooms for the members, and chambers for the use and residence of the officers and servants of the establishment. The basement is light, well ventilated, and conveniently arranged for culinary purposes.

The institution is in the sixth year of its establishment, and is extremely flourishing: the number of members (1000) is complete, and there are several hundred candidates for admission.

6. Miscellaneous Public Buildings.

Public Baths, Liverpool.—This establishment, built at the charge of the Corporation of Liverpool, in consequence of the removal of the Town Baths to make way for Prince's Dock, from the design and under the direction of John Foster, Esq., was opened in the month of June last. It is situated close to the shore of the Mersey, in the centre of the open line of Quay, between St. George's Dock and the river. The great difficulty of procuring salt water free from the mud with which the waters of the Mersey are at this point permanently saturated, has been most satisfactorily overcome by the successful action of an enormous filtering apparatus, through which water from the upper stratum of every high-water percolates. The baths have separate divisions for each sex—in each are an open swimming-bath, private cold and warm baths, with dressing-rooms, and every other convenience and improvement which the munificent means of the Corporation could obtain from the assistance of modern taste and science.

The erection of this building presented an opportunity of providing for the accommodation of the numerous persons who may be obliged to wait for the passage-boats during unfavourable weather, and in consequence a colonnade has been extended along the whole of the river-front of the building, and appropriated to this desirable purpose. The filtering apparatus was designed by the late Mr. Charles Sylvester; the execution of it, and the arrangement of the machinery and apparatus by which the water is raised and warmed in a most simple and efficacious manner, has been performed by his son. The cost of the whole, when entirely completed, it is estimated will exceed 30,000*l.*

Commercial Buildings, Leeds, were commenced in May, 1828, and opened in their complete state in October, 1829. The edifice is so situated at the southern end of Park Row, as to have streets running along three of its sides, and a cemetery on its fourth; by this means it is advantageously detached from all other buildings. The style is an imitation of the Grecian. On the ground-floor is an entrance-hall, in which "Change" is held daily: on the right is a news or reading-room, about 65 feet long, 33 feet wide, and 25 feet high, divided longitudinally into three compartments by Corinthian colonnades; adjoining is a committee-room, &c., in which

newspapers and maps are preserved for the inspection of the subscribers. On the left of the entrance-hall is the coffee-room of the Hotel and Tavern, which is included in the building. Distributed in several parts, are offices for brokers, &c.; and in the basement are extensive ranges of wine vaults. On the first floor are dining and concert rooms with all the usual and necessary conveniences. The area of ground covered by this establishment is about 1324 superficial yards. It has been erected and furnished by a company of proprietors at a total cost of about 34,000*l.*

7. Markets.

The New Fleet Market.—The Corporation of the City of London were authorized by an Act of Parliament, passed in 1824, to remove the present market, and to provide for a new one. The execution of this public improvement was confided to a Committee, who obtained a new site, cleared away the old houses, erected suitable buildings, and made such advances in the other numerous arrangements necessary, as enabled the Corporation to open the New Market for the commencement of business on the 20th November.

The position of the new site is well chosen, and is immediately adjoining the west side of the old market near its northern end, on the same sloping surface or inclined plane upon which Holborn-Hill and Fleet-Street stand, and which is remarkably favourable to the surface drainage, so valuable, and often so rare, in market places. The form is a parallelogram, containing about 1⅓ acre, on two sides of which are the buildings, 41 feet high and 48 broad, and measuring along the middle about 480 feet long, which enclose the shops of the butchers, poulterers, &c.; the third is a spacious room, 232 feet long, 48 feet broad, and 41 feet high, for the fruiterers, &c. opening to the central area by an arcade at several points; the fourth is open to the street, but separated from it by a lofty iron palisading. The quadrangular area, surrounded by these buildings and palisading, is 232 feet by 150 feet, or nearly 3900 square yards, and is arranged into separate allotments with great care, and in a novel manner, for the dealers in vegetables, &c.: the whole is amply provided with the important conveniences of water, light, &c. at all times when the market is open. The west side of the market-buildings runs along Shoe-Lane, from which there are three entrances; the south side, or the open one, forms one side of Stonecutter's-Street, which descends to the old market from Shoe-Lane. In this street are the principal public accesses. An avenue runs along the middle of the market-buildings, and may be entered from the streets, on each side of which are the shops for meat, poultry, fish, &c. The quadrangle has two large entrances for waggons, and smaller ones for the visitors of the market. Over the centre of the building, on the north side of the quadrangle and facing the open side, is a tower, on which a clock is placed, illuminated at night by gas, in a similar manner to that of St. Bride's. The shops are 79 in number, and are all let; the rent of one of them is 15*s.* per week, and with a sitting-room behind, which has a fire-place, 25*s.* per

week. The regulations for the security and convenience of those who may visit the market are said to be drawn up with great care; a precaution extremely important in an establishment necessarily visited by large numbers of the female sex. Eatables only will be permitted to be bought and sold in it.

The expense of this market has necessarily been very great, the purchase of the site, the buildings which stood upon it, and the rights of the occupiers, is stated to have been nearly 200,000*l*. The erections of the market cost 30,000*l*. To meet this, (beyond the public convenience, which will be immense,) there will be the annual income, which must be considerable.

The wretched and offensive hovels of the old market are intended to be swept away before the middle of December, so that the broad line of street from the Obelisk, in St. George's Fields, to Holborn-Bridge, will be open and clear throughout its whole length. The name of *Fleet Market* is to be transferred to the new establishment, and *Farringdon-Street* is to be the designation from the junction of Ludgate-Hill and Fleet-Street to that of Skinner-Street and Holborn-Hill. If this line should be extended towards Islington, and the same width maintained, as is in contemplation, and may be said to be absolutely necessary, the access from the North to the heart of the metropolis will be as direct and commodious, as that of the South.

Covent-Garden Market.—The incommodious and mean buildings which crowded the large area of Covent-Garden have nearly all been removed; and a handsome market is erecting at the cost of the Duke of Bedford. The north and south and east colonnades are of granite, and are finished; the body of the market is proceeding.

8. Docks, Bridges, &c.

St. Katharine's Docks.—The Eastern Dock (marked F. in the plan given in the Companion for 1829, p. 221) was opened for the reception of shipping, at the beginning of November. This dock increases the wet-dock accommodation of the establishment to one hundred and fifty vessels, besides craft.

Port of Hull—The Junction Dock at Hull has been completed, having a water surface of about six acres, and affording accommodation to sixty-six square-rigged vessels. By this work a communication is opened with the Old Dock, one of the most capacious in England. The expense of the new Dock has been £180,000.

Port of Goole, Yorkshire.—The rising importance of this port, in consequence of the convenience it has afforded to a large district of great manufacturing importance, during a trial of three years, appears to have exceeded the most sanguine expectations. The Government have given it the sanction of their approbation, by having made it, in August 1828, a bonding port, and thereby placing it on an equality with London, Dublin, and Liverpool. By the statement given of the Customs Returns, in he present Companion, a correct idea may be formed of the business transacted at this port, during the fifteen months ending July 5, 1829.

The position of this port is considerably more inland than Hull, being on the River Ouse, at some distance from the point at which it falls into the Humber, and close to the junction of the Dutch river with the former. Though so far up the country, vessels drawing 15 feet 6 inches water have discharged at Goole, within the last two months.* It has two wet-docks and a basin, connected with the Ouse by locks. The first, or the *Ship Dock*, is in length 600 feet, in width 200, and will contain fifty-four sail of square-rigged vessels, seventeen of which can lie at the quays at the same time.

The second, or *Barge Dock*, is in length 900 feet, in width 150, and is adapted to the small craft which navigate from Goole, and from seawards, into the interior of Yorkshire, of which it will accommodate 200 sail.

The *Basin* or *Harbour* is 250 feet by 200, and has nineteen feet depth of water. The timber-pond will contain 3000 loads.

The conveniences on these are described to contain 12,000 superficial yards of vaults and floors for the bonding of goods and merchandise, and particularly foreign grain; fourteen deal yards, spacious sheds, and every other accommodation.

From Goole a canal runs up to Ferrybridge, where it effects a junction with the river Aire. This completes the water connexion with Leeds and Wakefield; and by the numerous natural and artificial lines of navigation which diverge from these two important places, it maintains an economical and uninterrupted communication with the distant counties of Lancashire, Cheshire, and Staffordshire. So rapid is the transit from Leeds and Wakefield, that goods sent from these places in the evening, will reach Goole in twelve hours, and may be on their voyage to Hamburg, &c. &c. on the following day.

By an act obtained in the 9th of George IV. the company have the power of making additional docks and warehouses, and such other improvements and conveniences as the increase of the trade of the port may at any time require. Steam-boats wait off the port of Hull, (where vessels bound for Goole are visited by the revenue officers,) to facilitate the navigation of the rivers Humber and Ouse.

New London Bridge.—This bridge is advancing rapidly to its completion. All the centering is struck. The land arches of the bridge are in progress; and the construction of the arch across Thames-street, for the approach to the bridge on the city side, has commenced. We hope to give a detailed account of this splendid work in the Companion for 1831.

Chester Bridge.—A new bridge, of a single arch, is in progress of erection over the Dee at Chester. The span of the bridge is 200 feet, being the largest stone arch ever built, the road-way 33, the elevation from low water mark 54.

The southern abutment is finished, and its wing walls are nearly

* The following is an extract from a survey, made by order of the Trinity-house at Hull;—"The lowest sounding in the passage from Hull to Goole, at low water is five feet; the neap tides flow eleven feet at Goole, the springs fourteen or seventeen feet." If the fall in the river between the two places be taken into consideration, it will prove that there is ample depth of water for vessels drawing sixteen feet to Goole.

so; the northern abutment is, in the front, got up to the springing course; its wing walls are scarcely yet commenced, though the piles are now on the ground, and most of the stone is raised. Two of the four transverse walls for the support of the centre are built. The following is a sketch of this graceful edifice, which is one of the last designs of the late Mr. Harrison, of Chester:—

9. Roads.

The third report of the Commissioners of the *Metropolis Turnpike Roads*, dated April 29, 1829, details some important experiments either effected or contemplated. The Commissioners have been enabled entirely to abolish the Night Tolls, "which, from being leviable only within particular hours, and attended with other circumstances liable to doubt and contradiction, were the fruitful sources of vexation and disputes." The Commissioners have also been enabled, with the sanction of parliament, to equalize the tolls. (See Public Acts.) The most valuable improvement which the Commissioners contemplate, is the removal of turnpike gates in and near the metropolis; assessing the parishes for the maintenance of the roads, instead of taking a toll. The following is a list of the length of road in each parish, which is to be given up, and placed, like others, under the care of the respective parishes through which they pass:

	Length. M. Fg. Yds.	Increased Parochial Rates. d.
St. Mary-le-bone.....	1 7 187	$\frac{5}{8}$
St. Pancras.....	2 0 16	$1\frac{1}{4}$
Clerkenwell	2 0 56	$2\frac{3}{4}$
Islington	60	$\frac{1}{16}$
St. Luke's.....	5 219	$\frac{3}{4}$
Shoreditch.....	7 180	$\frac{1}{2}$
Paddington.....	4 48	$\frac{1}{2}$

Mr. M'Adam's report urges the extension of stone roads, and adds that nine miles of such road have been added to three miles constructed by the late trustees.

The sixth report of the Commissioners of the Road from *London to Holyhead*, details many improvements on this great line. The Appendix, being Mr. Telford's report, communicates the results of

an experiment on the construction of roads, which appears of considerable importance, recommended as it is by the experience of this judicious engineer:

"In order to ascertain the most effectual mode of rendering the driving way hard and smooth, I caused an experiment to be made along a quarter of a mile, at the northern extremity of this road, by constructing the roadway with a bottoming of Parker's cement and gravel, and with a coat of Hartshill stone laid upon it; and to ascertain what would be the comparative effect of using the same stone on the old surface of the road, I had a large quantity of it laid on between the Arch and the Holloway Road. The result is, that between the months of October and March last, full four inches of the stone on the old road, between the Arch and the Holloway Road, was worn away, where eight inches had been laid on, while not one inch was worn down where it was laid on the cement bottoming. This result corresponds with other trials where bottoming has been made with rough stone pavement.

"This leads to the conclusion, that in all cases where the sub-soil of a road is clay, or in truth any thing but gravel, and where stone cannot be procured at any moderate expense, a bottoming of cement and gravel ought to be adopted.

"Pursuant to the authority given me by the Commissioners, a contract has been made for laying a cement bottoming fifteen feet in width in the middle of the whole of this road, for coating it with Guernsey granite, and for covering the sides of the fifteen feet with four inches of strong gravel, and for making footpaths.

"It is but justice to my assistant, Mr. Mac Neil, to mention that this plan of forming a cement bottoming was suggested to me by him; a plan which promises to be of the most important advantages in those districts of the country where stones cannot be procured at a moderate expense.

"The different parts of the Holyhead Road which have been newly made with a strong bottoming of stone pavement, placed beyond all question the advantage of this mode of construction; the strength and hardness of the surface admit of carriages being drawn over it with the least possible distress to horses. The surface materials, by being on a dry bed, and not mixed with the sub-soil, become perfectly fastened together in a solid mass, and receive no other injury by carriages passing over them than the mere perpendicular pressure of the wheels; whereas, when the materials lie on earth, the earth that necessarily mixes with them is affected by wet and frost, the mass is always more or less loose, and the passing of carriages produces motion among all the pieces of stone; which, causing their rubbing together, wears them on all sides, and hence the more rapid decay of them when thus laid on earth, than when laid on a bottoming of rough stone pavement. As the materials wear out less rapidly on such a road, the expense of keeping it in repair is proportionally reduced. The expense of scraping and removing the drift is not only diminished, but with Hartshill stone, Guernsey granite, or other stone equally hard, is nearly altogether done away."

The fifteenth report on *Highland Roads and Bridges* contains a very detailed report, by Mr. Telford, of his inspection of the Roads and Bridges in Scotland maintained under the Parliamentary Commissioners.

10. Canals and Railways.

Birmingham Canal Improvements.—The important portion of the system of inland navigation called the Birmingham Canal, was originally made by authority of Parliament in the years

1768 and 1769, for the purpose of forming an easy communication between the mineral districts of Staffordshire and the town of Birmingham on the southern side, and the town of Wolverhampton on the northern side. Its original length was a little more than twenty-two miles from Birmingham to its junction with the Staffordshire and Worcestershire Canal below Wolverhampton, and the facilities which were thus afforded to the active energies of a large manufacturing population, created upon the original line such an important trade as to induce the proprietors from time to time, under sanction of the legislature, to make branches and extensions of their canal, in various directions through the coal and iron districts in its immediate vicinity, and also to make an additional line of canal from Birmingham to Fazeley, in order to open a new road to London through the Coventry and Oxford Canals, so that the whole canal has now spread itself over a distance of more than seventy miles. Within the last three years, the improvements upon this canal have been such as to excite the admiration of scientific engineers, and to command the approbation of all persons who are accustomed to take pleasure in contemplating works of science and national improvement. The original line of this canal, as laid out by the celebrated Mr. Brindley, was very circuitous, and one great object of improvement has been to shorten the mileage between Wolverhampton and Birmingham; this has been already effected, under the superintendence of Mr. Telford, to a considerable extent, and when the works now in active progress for this purpose shall be completed, the distance by canal between these two towns will be about fourteen miles, being scarcely one mile farther than the turnpike road; many deep cuttings have been made, and numerous embankments have been raised in order to effect this object, which is of great importance to a thoroughfare trade. But what is of still more consequence to the immediate district, the communication between the town of Birmingham and a great portion of the collieries will be expedited by the avoiding of three ascending and three descending locks, which have heretofore existed at Smethwick and Spon Lane. The quantities of earth which have been moved, in order particularly to effect the avoidance of these six locks, are ascertained to be 1,697,414 cubic yards; the whole of which have been excavated and removed, in a length of two miles, and in a period of two years and a half, between March 1827, and September 1829. On this part of the work the slopes are one and a half horizontal to one perpendicular. The greatest depth of cutting is seventy-one feet; the water-way of the canal is made forty feet wide, and five feet six inches deep; it is walled with stone on each side; and the trade is very much facilitated by the existence of a towing path, twelve feet wide on each bank. Over this chasm are thrown, at various places, bridges of brick and stone, in the construction of which considerable ingenuity has been displayed, as several of them are much askew. At the place of greatest excavation is erected the largest canal bridge in the world; it is made of iron: the arch is one hundred and fifty feet span, and

over it passes a public roadway twenty-six feet wide; each of the other bridges is fifty-two feet span, and all the bridges are so wide as to admit the water-way and towing-path without being subject to contraction.

Near Spon Lane is constructed an aqueduct of two arches, by means of which the original line of canal is carried across the new works, without the water-way or towing-paths of either the old or new lines being in any way contracted; and at Smethwick has been made an elegant iron-aqueduct, through which any surplus water is conveyed from the upper level of the old canal, across the new works, into a feeder which has been formed to carry water to a magnificent reservoir recently constructed by the Canal Company, covering upwards of eighty acres of ground, and of an average depth of more than thirty feet. This feeder also has been made to convey water from the reservoir into the upper level, or original line of the canal; while the new works, or Birmingham level, can be supplied with water from the same reservoir at any moment, if the quantity provided by the descending lockage from the upper level to the lower, should be at any time insufficient to keep up the canal to its proper level.

Throughout the whole line of improvements are erected, at convenient stations, small accommodation bridges, to enable traders to cross off the line, and thus prevent any inconvenience arising from the regulation, which is rigidly enforced, for the boats passing towards Birmingham to use one towing-path, while those passing towards Wolverhampton and the collieries use the opposite one. But what is particularly to be remarked is, that each of these smaller bridges is constructed of such span, as to render unnecessary the slightest contraction of the towing-paths or water-way.

At Smethwick the upper level decends into the improved new line of canal, and between this point and the town of Birmingham, the line of canal has been so much shortened that in a distance of four miles and three-eighths, nearly two miles have been saved; in order to effect this, there have been formed three considerable embankments, and a depth of cutting has been effected, which, prior to the works completed at Smethwick, were thought to be of extraordinary magnitude. The quantity of earth removed to complete these three embankments, and the intervening deep cutting, was 370,000 cubic yards, which was moved in the space of two years and a half, and throughout a distance of two miles and upwards, as between the different points of improvement lay portions of the original circuitous line; this part of the canal is principally walled on each side, has double towing-paths, is in all parts forty feet wide, and for some distance the water-way is more than fifty feet wide. Where the canal is not walled the water-way is effectually fenced with wood-work. Across this part of the canal are thrown several elegant iron-bridges; but there are two public road-bridges in this district, which were built of common brick in 1826, and are so much askew as to deserve mention, one being fifty-two feet span and

fifty feet askew, and the other being fifty-two feet span and forty-six feet askew; the road-way of the former being sixty-six feet, and of the latter thirty feet wide. The same plan of making the bridges of sufficient dimensions to avoid any contraction of the water-way or towing-paths, prevails throughout this portion of the work, and is intended to be carried into effect throughout the line towards Wolverhampton.

At a place called Bloomfield, in the parish of Tipton, an excavation is being made, extending towards Deepfield, by means of which, though the new works will be in extent only one mile, the trade of the country will be able to avoid an old circuitous route of more than five miles. At this part of the improvements the greatest depth of cutting is ninety feet, the canal is formed twenty-four feet wide, and five feet deep; having the sides walled, and a towing-path on each side. The quantity of rock and earth already removed and intended to be removed in effecting this important shortening, may be fairly estimated at not less than one million of cubic yards.

The foregoing statements relate to the works which are immediately connected with the improvements on the main line of the canal; but in forming an idea of the important works which have been undertaken by the Proprietors of this canal, notice should be drawn to the various collateral branches which have been made at various times, and particularly within the last three years, during which new lines have been opened into various estates, and in the formation of which no less a quantity than 500,000 cubic yards of earth have been moved. Great and important as these improvements must be to the commercial interests of the country, it is highly gratifying to know that they are carried into effect without the imposition of the slightest additional charge on parties who trade on the line of this canal.

Norwich and Lowestoft Navigation (Continued from last year).—The sluice and lock between Lake Lothing and the sea have had their foundations laid in during the past season, at 30 feet below the level of spring-tides. Upon them the side-walls are being constructed. This noble piece of masonry has a substructure 10 feet thick, 50 feet wide between the walls, and 450 feet long; formed by an inverted arch, groined, and filled up solid to its chord-line. The floor of the lock is coincident with this line, and stands at 12 feet below the low water of spring-tides. The iron swing bridge, on which the London turnpike road is to be carried across the Lake, is cast, and lies ready to be fixed. The deepening of the Lake for the purposes of an harbour, and the formation of the necessary embankments, are simultaneously and incessantly carried on by a dredging machine of peculiar construction, which lifts from two to four tons per minute, from depths of 10 and 12 feet. The principal contractors for these important works are Fenton and Murray, Leeds, machinery; Seaward and Co. Limehouse, iron bridge-work; Jabez Bayley, Ipswich, sluice and lock gates; Wade, Kirkstall, stone-work; and Wright and Cattermoul, Norwich, brick-work. The spirit and perseverance of the Com-

pany, at whose expense this undertaking is carried on, is deserving of the highest encomium. Their present chairman is Colonel Harvey, of Norwich, and the direction of the works is confided, as reported last year, to the able engineer Mr. W. Cubitt, who speaks confidently of the completion of the Sluice and Bridge works early in the ensuing spring.

The Cromford and High Peak Railway is a very interesting and extensive work carrying on in Derbyshire; and by the kindness of the engineer we are enabled to offer the following details of its progress:—

SIR,

Having been requested to give some account of the Cromford and High Peak Railway, and of its progress towards completion, I send you the following statement. The act for its formation was obtained in the year 1825; and the object was, to effect a communication between the Cromford Canal, and the Peak Forest Canal, over the mountainous district of Derbyshire, which presented too many natural obstacles to the completion of the junction by canal, at a reasonable expense; although a direct communication between Manchester and the fertile and populous districts of Nottingham, Derby, and Leicester, was most desirable.

Derbyshire is intersected by a range of mountains, extending northwardly into Yorkshire, and southwardly into Staffordshire. They divide the waters which run to the eastern and western coasts. Over these mountains, which consist principally of limestone, the Cromford and High Peak Railway has been carried; and although the lowest elevation has been selected, and this reduced by penetrating the ridge by means of a tunnel, yet the railway ascends to a level of 992 feet above the Cromford Canal, and of 1270 feet above the sea.

I shall commence my description of the line from the Cromford end. The railway begins at the Cromford Canal, one mile south of Cromford, and immediately ascends by two inclined planes to an elevation of 465 feet: the lower one, being 580 yards long, rises 204 feet: the upper one, 711 yards long, rises 261 feet. The waggons are conveyed up these inclined planes by steam-engines, two at each station, of twenty-horse power, (or forty-horse power to each plane); and by means of endless chains, directed and supported by pullies, two waggons are conveyed at a time, each containing from five to six tons, and with a velocity of four miles an hour. These are already completed, and have been tried, although not opened for trade. In this length 123,000 cubic yards of excavation have been made, principally through grit or freestone rock, of excellent quality for building purposes. From the top of the second plane, the railway proceeds on a level for rather more than one mile, when it again ascends by the Middleton inclined plane, which rises 253 feet in 708 yards. This part is completed, having had 32,000 cubic yards of excavation done through solid limestone rock; the greatest depth of the cutting being 43 feet. This plane will also be worked by two steam

engines of twenty-horse power each, similarly applied with the former; they are, at present, erecting, and will be completed in two months. It then proceeds on a level, and at the further distance of one mile, commences the most extensive piece of excavation in the whole line, which has been made principally in the limestone rock, and to the depth of 68 feet. A tunnel through the rock, of 105 yards in extent, (a portion of which is arched masonry,) occupies the centre of these cuttings; this work is nearly completed: the material from the cutting, amounting to 168,000 cubic yards, forms the Via Gellia Embankment, which immediately adjoins the cutting. At the termination of the embankment, the Hopton inclined plane commences, which rises 98 feet in 457 yards: the two engines for this plane are each of ten-horse power, and are now being erected.

The railway then proceeds for twelve miles, upon a level, with the exception of about two miles, which have a rise of 10 feet in a mile, for the purpose of lessening the depth of a very considerable cutting near Haven Lodge. The principal cuttings in this length are, on Carsington pasture, 20,000 cubic yards; in Brassington liberty, 58,000; to form the large embankment at Mininglow, 78,000 yards; and at Pike Hall and Burntcliff, 40,000 yards. The extensive cutting near the Manchester Road and Haven Lodge, 125,000 cubic yards, and thence to the Hurdlow inclined plane, 38,000 yards, have been excavated. The greater portion of these cuttings have been made through limestone rock, and have been blasted with gunpowder; and the material applied in the formation of embankments. Thus far completes a distance of sixteen miles, on which the rails will be laid, and the road opened for trade by the end of the present year.

The railway then ascends to its summit, or greatest elevation, 168 feet in 850 yards at the Hurdlow inclined plane, which is formed and ready for the reception of the rails. The engine-house is in preparation for two engines of ten-horse power each. The railway then continues on a level for nearly twelve miles, the greatest part of which is prepared for the laying down of the rails. The principal excavations in this length are at Hurdlow and Brierlow, 57,000 cubic yards; at Hindlow, 26,000; at Hillhead and Harpurhill, 44,000; and south of Turncliffe, 46,000 yards, all through limestone rocks: north of Turncliffe, 47,000 cubic yards, through shale and clay; also, at Ladmanlow and Burbage, 62,000 yards; all these are completed.

The tunnel near Buxton will be 580 yards long, of which 80 yards remain to be executed. The tunnel is 21 feet wide, and 16 feet high above the surface of the railway. It has been driven from the ends, without any pit or shaft being sunk, which has protracted the work, and the *measures* passed through have been exceedingly hard clunch or shale: to remove which, blasting by gunpowder has been necessarily resorted to. The whole of this tunnel is arched with masonry. It will be completed by the end of the present year. Beyond the tunnel to the Upper Goyt inclined plane, 38,000 cubic yards have been excavated. The Upper Goyt

inclined plane descends 266 feet in 660 yards of length; and the lower plane descends 191 feet in 455 yards, which brings the railway into the valley of the river Goyt. These planes, having 30,000 yards of excavation, are formed, and both the engine-houses are in considerable forwardness. They will each contain two engines of twenty-horse power, with machinery similar to those before mentioned.

The railway then proceeds on a level for 2¼ miles, having 74,000 cubic yards of cutting in the length, which is nearly completed. Then commences the Shallcross inclined plane, which is 817 yards long, and descends 240 feet, the *forming* being completed, and the engines, two of twenty horse power each, are in progress. The line forwards is also completed, having 18,000 cubic yards of cutting to the Whaley inclined plane, which is 180 yards long, and falls 42 feet, at the foot of which the railway communicates with the Peak Forest Canal.

After much inquiry and examination into the subject, cast-iron rails have been adopted in preference to the malleable ones, from a belief that they will be found more durable from their construction, more firmly seated on their beds, and readily adjusted; and from their inflexibility, offering less resistance to the movement of the carriages. The rails are cast in lengths of four feet, having the pedestal at one end, and the opposite end adapted to it, to admit of movement at the joining, and at the same time ensure the steadiness of the rail. Each rail weighs 84 lbs., or 100 tons of rails are required for a mile of single road.

The total length of railway is nearly 33 miles, which will be completed and opened for general trade in the course of the ensuing summer. Forty-seven bridges and archways have been built, three others with cast-iron arches are nearly completed, and two others are in progress; in all fifty-two.

The forming and completing the railway with a double line of road will have cost 150,000*l.*, and the engines, reservoirs, and machinery, a further sum of 30,000*l.*, making the total outlay of capital 180,000*l.*, a sum by no means great, when compared with the magnitude of the work, and the many natural obstacles which had to be overcome. In the execution of the work the greatest economy has been observed, although proper care has been taken to effect it in a substantial and permanent manner, utility more than ostentation having governed the committee in the application of the capital expended.

In concluding, I ought to state, that the Cromford and High Peak Railway was planned and laid out by the late Jos. Jessop, Esq., civil engineer, who unfortunately has not lived to see the completion of it.

I am, Sir, &c. &c.

THOMAS WOODHOUSE.

October 1st, 1829.

Liverpool and Manchester Railway.—The attention of the public has been recently directed to the remarkable competition of Loco-

motive Steam engines upon this Railway.* The success of these experiments has confirmed the value of this great undertaking. We are enabled, from the obliging communication of the Engineer, to continue our notice of the progress of the works.

DEAR SIR,

Since my last communication to you on the subject of our works,† we have made considerable and rapid advances towards completion.

Commencing at the yard at Wapping, near the docks, which is intended as the grand depôt for the Liverpool end of the line, we have very nearly completed the whole of the earth work; the side walls are already in a very forward state, and the flooring and roof for an extensive warehouse, capable of receiving a large bulk of merchandise, are in progress. Under this warehouse, four distinct lines of railway are intended to be laid, in order to render as much facility as possible in loading and discharging the goods to and from the waggons.

The tunnel, since last year, has been completed. A double line of railway has been laid throughout, and a row of gas lights has been suspended from the centre of the arched roof at a distance of twenty-five yards from each other. The effect, when lighted up, is strikingly beautiful, for the rays of light from each lamp throw a distinct luminous arch on the roof, and the series diminishing according to the laws of perspective, gives the appearance of a number of distinct arches instead of one continued vault.

The tunnel is lighted up every Friday for public inspection, and many ladies have descended in a carriage at the rate of twenty-five miles an hour, (performing the whole distance in three minutes,) without experiencing any alarm or disagreeable sensation.

Since last year another tunnel has been made, quite distinct from the larger one, and which extends from the deep cutting at Edge-hill, to near the Botanic Garden. It is about 300 yards long, fifteen feet wide, and twelve feet high. This tunnel is chiefly intended for the conveyance of passengers and coals to the higher part of Liverpool; it is quite completed, and, like the large one, is lighted with gas.

The excavation for two lines of rails at the top of the tunnel, called Edge-hill, is completed, and the rails are laid down within 100 yards of the tunnel: at this place are making four distinct lines of railway, in order to arrange the trains previous to their starting for Manchester.

Olive Mount Excavation has been completed through the rock, and there now only remains a small portion of clay cutting, which will be removed in three or four weeks.

Two bridges have been thrown over this excavation, and two others are now building.

* The Rocket actually accomplished one mile in one minute and twenty seconds being at the rate of forty-five miles an hour.

† See Companion to the Almanac for 1829, p. 226.

Broad Green Embankment has also been completed, and nothing now remains to be done but to lay down the permanent rails, which will be commenced immediately.

From Huyton, through Whiston, Rainhill, and Sutton, the excavations are finished; and for a distance of four miles the permanent rails are laid down, and finished off, excepting for about a mile, where a single line is only laid.

It is at Rainhill where the recent trials of the powers of locomotive engines have been made, and which have so strikingly shewn the advantages which may be expected from this rapid and economical mode of conveyance.

I trust I shall not be considered digressing from the subject, when I add, that in contemplating a speed of thirty miles an hour with passengers, and from fifteen to twenty miles an hour with a load of merchandise, at a cost of almost nothing, comparatively speaking, I can scarcely set a limit to the advantages which this country has a right to expect from this improved mode of conveyance and means of intercourse; and even should no further improvements be made;—and I doubt not but many and important ones will follow,—there has been sufficient to shew, that locomotive engines are capable of producing and maintaining a speed beyond any other means at present known.

The London road at Rainhill has been carried over the railway by means of an oblique or skew arch, the direction of the railway and that of the road varying only 34°.

The arch and abutments are of solid stone-work, and the arched stones are placed at right angles to the face of the bridge.

The great viaduct across the Sankey canal and valley, which consists of *nine* arches of fifty feet span each, is nearly completed; the arches are all turned, and the centres removed, and the cornice and parapet walls are rapidly advancing.

The Kenyon Excavation has been proceeding without much interruption,—the materials from which have gone to form the embankment eastward towards Chat Moss, and westward toward the Sankey Valley. The eastward embankment will be completed in about two months, and the westward in about three months; 80,000 cubic yards yet remain to be removed.

Chat Moss.—The permanent rails have been laid nearly the whole of the way across the moss. A single line is laid for four miles, (one mile and a half of which has rails laid for the double line, but not finished off,) and HORSES WITH LOADED WAGGONS, EACH WEIGHING FIVE TONS, ARE CONSTANTLY MOVING OVER THOSE PARTS OF THE MOSS, WHICH ORIGINALLY WOULD SCARCELY BEAR A PERSON WALKING OVER IT.

The Barton Embankment, on the east of the Moss, is nearly done, and the Eccles Excavation requires about 20,000 cubic yards to be removed for its completion—both these portions of the work will be finished in little more than a month: from Chat Moss to Manchester, the permanent way is laid for more than one half the distance. The bridge across the river Irwell has commenced: the foundations are in, and the abutments are now building.

There are forty-four Bridges on the line already built—nine are now building, and a few others of minor importance remain to be erected.

Two Locomotive Engines have been in use (one near Liverpool, the other at Eccles) during the last summer, dragging the marl and rock from the excavations, by which a great saving has been effected. The one near Liverpool has saved near 50*l.* per month, when compared with horses; and the one at Eccles in a still greater proportion.

The "Rocket," locomotive engine, which gained the premium of 500*l.*, is about to be put on Chat Moss, to drag the gravel for finishing the permanent way, and there is no doubt but a proportionate reduction will take place—besides doing away with the wear and tear of the horse-track, which on all new-made roads is so considerable.

The immense quantity of rain which has fallen during the last six months has had considerable influence in retarding the progress of the works—particularly in the marl excavations. It was expected that the line might be opened by the 1st January, 1830; and had the season been at all favourable there is no doubt but this might have been effected; but, from the nature of such a work as this, it is almost impossible to calculate on its completion with much certainty; but if we have a moderate winter, I have no doubt but the line may be opened in five months from this time, and the line as far as the collieries may be opened in two months.

I am, dear Sir,

Your obedient and faithful servant,

Liverpool, Oct. 25th, 1829. GEORGE STEPHENSON.

11. DRAINAGE AND WATER-WORKS.

Eubank Drainage.—Seven miles to the north of Aberystwith, on the sea-coast, and forming the estuary of the navigable river Doney, is an extent of fen land amounting to 9000 acres, two thirds of which were subject to the inundations of spring tides, the whole common to the proprietors of lands in the lordships of Llanfihangel, Gener, and Glyn, in the county of Cardigan. In the year 1813, an Act of Parliament was obtained to "drain, embank, and divide these lands," and the expense then estimated to effect these objects, was under 10,000*l.*; but unfortunately, from the novelty of such an undertaking in Cardiganshire, and the inexperience of the parties interested, the sum expended has exceeded 24,000*l.*, but still it is most gratifying to see such an extent of valuable soil, so long a reproach to the country, brought into a state of cultivation. Embankments about twelve miles long have been formed, besides two navigable cuts, and a road of three miles, with an excellent stone bridge, completed.

The Shaws Water Scheme.—Greenock has heretofore been so ill supplied with water, that, during every dry season, it had to be carted from a distance for the ordinary supply of the inhabitants. To remedy this, and under the immediate auspices of the late Sir Michael Shaw Stewart, and of his son and successor, a Joint Stock Company, with a capital of thirty-one thousand pounds, was

incorporated by Act of Parliament in 1825. The reservoirs already formed contain 303,797,223 cubic feet; and when the other five auxiliary reservoirs are finished, the whole will contain above 310,000,000 cubic feet of water.

The experience of the two last years has proved that the available drainage into the various reservoirs now formed, is above seven hundred millions of cubic feet annually: and it will be observed that the reservoirs are capable of containing a full supply for the whole consumption for more than six months; so that not only the surplus waters of one wet season may be retained for supplying the dry season of the same year, but the surplus of several wet years stored up to supply a drought of several years duration, should such ever occur. The water for the supply of the inhabitants, sugar boilers, and others requiring pure water, is collected into reservoirs, set apart for that purpose, and as little as may be of moss water admitted into them. A separate conduit has also been made to carry this water to the filters, just above the town, where a basin has also been made, large enough to contain something more than a day's supply of the filtered water. This pipe, which is fully fifteen inches square, is perfectly water tight; being formed with stone, nicely joined and cemented; and costs something less than one-third the price of a cast iron pipe of equal capacity. Wherever the pressure is not great, such a conduit is preferable to an iron pipe; as the water by passing over stone is rather improved than injured, which is not the case with iron. In this conduit, (which is deep enough in the earth to avoid the frost of winter and heat of summer,) cess-pools are formed for the deposit of sediment; it being desirable that the water should be as pure as the nature of things will permit before it enters the filters. The medium through which the water percolates in these filters has been made such, as not only to detain any sediment that may remain, but also the colouring matter of moss water and other similar impurities, should there chance to be any such.

Three filters are now formed: each is fifty feet long, twelve wide, and eight deep. The water is made to percolate through them, either upwards or downwards, at pleasure. When it percolates downwards, and the supply of filtered water becomes sensibly less—which, after some time, must happen to every filter, by the lodgment of the sediment—then, by shutting one sluice, and opening another, the water is made to pass upwards with considerable force, and, carrying the sediment along with it, falls into a waste drain made for that purpose. When the lodged sediment is thus removed, and the water begins to run clear, the direction of the sluices is again changed, and the filter operates as before.

In addition to the supply of Greenock with water, these works are made available as a power for impelling machinery upon a very large scale. Mr. Thom is the Engineer.

XXXV. PATENTS.

Patents Sealed, January to November, 1829.

Anchors—Improvements in the construction of, W. Roger, Norfolk Street, Strand.

Apparatus—An improved piece of machinery applicable to steam-engines, pumps, water-wheels, &c., Mr. S. Smith, Derby.

Apparel—Preparation of a new kind of cloth, and the application thereof in the making of stays and other articles of dress, Mr. James Sinister, Birmingham.

Axletrees—Improvements in alxetrees and boxes for carriage-wheels, Mr. J. Slater, Birmingham.

————An improvement in axletrees for, and mode of applying them to, carriages, Margaret Knowles, Lavender Hill, Battersea.

————Improvements on axles or axletrees, and coach and other springs, G. K. Sculthorpe, Robert Street, Chelsea.

Bankers' Checks—Improvements in the manufacture of blank forms for bankers' checks, &c., to prevent forgery, N. Jocelyn, Newhaven, Connecticut, United States.

Barilla—Improvements in preparing, J. Mc Leod, Esq., Westminster.

Bits—Improvements in, Mr. Valentine Llanos, Hampstead.

Bleachers' Retorts—Improvements in retorts used by bleachers and makers of oxymuriate of lime, Mr. J. Morfitt, Corkridge, near Leeds.

Building—An improved method of constructing and forming ceilings and partitions for dwelling-houses, warehouses, &c., in order to render the same more secure against fire, Mr. W. North, Guildford Place, Kennington.

Burning Smoke—New method of, Mr. John Forbes, Cheltenham.

Calico Printing—An improved method of making metallic cylinders for, Mr. B. Cook, Birmingham.

Cane Juice—Improvements in the concentrating and evaporating of cane juice, Mr. J. Atchison, Clyde Buildings, Glasgow.

Cannon—Certain improvements in the construction of, Mr. J. Tucker, Hammersmith,

Carriage-Drags—An improved drag, applicable to wheel-carriages, to stop or retard their motion, Lieut. R. Parker, R. N., Hackney.

Carriages—An apparatus to afford safety in travelling, Mr. Z. Riley, Union Street, Southwark.

————Improvements in the wheels and axletrees of, Mr. E. Josephs, Haydon Square.

Cartridges—Improvements in making, Mr. J. D. Whitehead, Saddleworth, Yorkshire.

Cat-head Stoppers—Improvements in the construction of, Mr. W. Roger, Norfolk Street, Strand.

Cloth—Improvements in machinery applicable to dressing woollen cloths, Mr. J. C. Daniell, Limpley Stoke, Wilts.

Coaches—An improved coach, Mr. T. Brown, Birmingham.

Condensing Gas—Improvements in condensing gases produced by the decomposition of muriate of soda, Mr. J. Wright, Newcastle-upon-Tyne.

Cordage—Improvement in the manufacture of, Mr. John Robertson, Limehouse Hole, Poplar.

Cotton—Improvements in apparatus for removing the down from cotton and other fabrics, by singeing, Mr. P. Descroizilles, Fenchurch Street.

Culinary Apparatus—An improved arrangement of flues for the communication of heated air to culinary vessels, Mr. J. Frazer, Limehouse.

DISTILLATION—Improvements in, Robert Stein, Regent Street.
———————Improved distilling and rectifying apparatus, Mr. E. D. Phillips, Regent Street.
———————Improvements in, Mr. W. Shand, of the Burn, Kincardineshire.
DRESSING STONES—A machine or engine for, Mr. J. Milne, Edinburgh.
EMBROIDERY—Improvements in machinery for embroidering and ornamenting cloth, Mr. H. Bock, Ludgate Hill.
EVAPORATION—Improvements in evaporating sugar and other substances, W. G. Kneller, Great Pearl Street.
———————A new method of converting liquids into vapour, Messrs. J. Braithwaite and J. Ericson, New Road, Middlesex.
FIRE-ARMS—Certain improvements in apparatus to be applied to fowling-pieces and other fire-arms, Messrs. Lawrence, Strood, and J. Crundwell, Ashford.
FIRE-PLACES—Certain improvements on or additions to, J. A. Fonzi, Esq., Upper Marylebone Street.
FURNITURE—Improvements in chairs, sofas, &c. Mr. T. Minikew, Berwick Street.
GAS LAMP—A new or improved gas lamp or burner, T. Kilby, Wakefield, and H. F. Bacon, Leeds.
GILDING WOVEN FABRICS—Methods of gilding and silvering woven fabrics, to be used instead of gold and silver laced borderings, Mr. J. Burgis, Maiden Lane, Covent Garden.
HARNESS—Improvements or additions to harness or saddlery, part or parts of which improvements or additions are applicable to other purposes, Mr. W. Leeson, Birmingham.
——— AND SADDLES—Improvements in, Mr. W. Taft, Birmingham.
HATS AND BONNETS.—An improved imitation of Leghorn hats and bonnets, Mr. A. Deninos, Leman Street, Goodman's Fields.
——— CAPS—A combination of machinery for manufacturing, Mr. T. W. C. Moore, Hampstead.
HEAT—An improvement in apparatus for communicating heat, Messrs. H. C. Price and C. F. Price, Bristol.
"HUMAN SNARE"—A machine for detecting and detaining depredators and trespassers, so denominated, Mr. Madeley, Yardley, Worcester.
ILLUMINATION—Improvements in the mode of producing artificial light, Mr. W. Heard, Devonshire Street, Vauxhall Road.
IMPROVED VEHICLE—A new or improved vehicle for the carriage of passengers or goods, Mr. L. Quetin, Great Winchester Street.
INSTANTANEOUS LIGHT—An improved method of procuring, Mr. S. Jones, Strand.
IRON—Improvements in smelting and other processes in making bar-iron, Mr. J. Lambert, Liverpool Street.
——— PLATE—A new method of manufacturing or preparing, Mr. T. Morgan, Tipton.
KNIVES—For improvements in sharpening knives and other edge tools, W. Church, Esq. Heywood House, Birmingham.
LACE—An improvement in the manufacture of bobbin-net lace, Mr. T. Lawes, Strand.
——— Improvements in machinery for making bobbin lace net, Mr. J. Levers, Nottingham.
——— Improvements in machinery for making, Mr. T. Bailey, Leicester.
LEVER—Improvements in the lever, and the application of its power, Mr. J. Nicholls, Pershall.
LIGHT—A new preparation or manufacture of a certain material produced from a vegetable substance, and the application thereof to the purposes of supplying light, Mr. J. Soames, jun., Wheeler Street, Spitalfields.
LOCKS—An improvement in the construction of locks for fire-arms, Mr. G. H. Manton, Dover Street.

MACHINERY—A new method or methods of applying animal power to, Mr. T. S. Brandreth, Liverpool.
MALT-KILN—An improved, Mr. T. Salmon, Stokeferry, Norfolk.
MASTS—Improvements in the construction of made masts, Mr. R. Green, Blackwall.
MEDICINE—Embrocation to prevent or alleviate sea-sickness, Mr. P. Derbyshire, Ely Place, Holborn.
——— A certain medicine for gouty affections of the stomach, spasms, &c. Mr. J. Mushet, York Square, Regent's Park.
MOTIVE POWER—Improvements in the application of elastic and dense fluids to the propelling of machinery, Mr. R. Williams, Tabernacle Walk.
MUSIC BOOKS—A mechanical *volti subito* to assist musicians in turning over quickly the leaves of music-books whilst playing, Mr. A. Lewis, Birmingham.
NEW MOVEMENT—Method of converting a rotary into a reciprocating action, Messrs. W. Parr, Union Place, City Road, and J. Bluett, Blackwall.
PAPER—Certain improvements in the manufacture of paper for the hangings of rooms, &c. T. Cobb, Esq., Calthorpe House, Oxford.
——— MAKING—Improvements in the manufacturing and cutting of paper, Mr. J. Dickenson, Abbott's Langley, Herts.
PIANO-FORTE—Improvements upon the self-acting, Mr. T. H. Rolfe, Cheapside.
POWER AND MOTION—Certain apparatus for the purpose of communicating, Mr. R. Torrens, Croydon.
——— ENGINE—An engine to be worked by fluids or gases, P. Pickering, Dantzic, and W. Pickering, Liverpool.
——— LOOM—Improvements for power-looms in weaving cloth, Mr. W. Ramsbottom, Manchester.
PROJECTILES—An improved projectile, Mr. I. Dickson, Chester Street, Grosvenor Place.
PROPELLING—Improvements in propelling vessels, Mr. C. Cummerow, Laurence Pountney Lane.
——— Improvements in propelling vessels, Mr. J. Dutton, jun., Wooton-under-Edge.
——— Improvements in machinery for propelling steam-vessels, Mr. J. Perkins, Fleet Street.
——— A machine or apparatus for propelling carriages, vessels, and locomotive bodies, Mr. R. Crabtree, Halesworth.
——— MACHINERY—New and improved machinery for propelling carriages, or ships and other floating bodies, Mr. J. Moor, of Broad Wier, Bristol.
———Improvements in machinery for propelling vessels, &c. W. Church. Esq. of Heywood House, Birmingham.
——— VESSELS—Improved paddle-wheels for, W. Stead, Gildersom, and J. Stead, Doncaster, Yorkshire.
——— Improvements in the wheels or apparatus for, Mr. A. Bernhard, Finsbury Circus.
RAISING FLUIDS—Improvements in raising fluids to various distances, Mr. E. Wicks, King's Road, Chelsea.
RIGGING—Improvements in the machinery for securing, supporting, and striking top-masts, Mr. Prior, Albany Road, Camberwell.
ROPES, CORDAGE, &c.—Improvements in the manufacture of, Mr. G. Harris, R.N., Brompton Crescent.
RUDDERS—An improved mode of constructing the pintles for hanging rudders, Capt. John Lihou, Guernsey.
SASHES, SHUTTERS, DOORS, &c.—Improvements in, designed to afford security against burglars, Messrs. W. H. Kitchen, St. Giles's, and A. Smith, York Terrace, Westminster.
SHIPS' WINDLASSES—An improvement in, Mr. G. Straker, South Shields.

SPECIFIC GRAVITY—Apparatus to ascertain and register the specific gravity and temperature of fluids in transit, Mr. W. Brunton, Lombard Street.

SPINNING—Improvements in the machinery for spinning cotton and other fibrous substances, Mr. G. W. Lee, Bagnio Court, Newgate Street.

———Improvements in the machinery for spinning cotton, Mr. J. Hutchinson, Liverpool.

STEAM—Improvements in the apparatus for raising or generating steam and currents of air, and for the application thereof to locomotive engines, and other purposes, Mr. M. Poole, Lincoln's Inn.

——— BOILERS—Improved method of constructing, Mr. J. Bates, Bishopsgate Street.

——— ENGINES—Improvements in, Mr. T. Banks, of Patricroft, Lancashire.

———Improvements in, Mr. J. D'Arcy, Leicester-square.

———Improvements in rotary, Mr. G. Rennoldson, South Shields.

———Improvements in the, Mr. J. Udney, Arbour Terrace, Commercial Road.

———Improvements in steam-engines, and in machinery for propelling vessels, Mr. E. Galloway, King Street, Southwark.

——— MACHINERY—Improvements in, for propelling vessels, Mr. J. Pumphrey, Tally Hill, Worcester.

——— NAVIGATION—Improvements in paddles and machinery, Mr. O. H. Williams, North Nibley, Gloucestershire.

———An improved construction of paddles, Mr. S. Gritton, Pentonville.

———Machinery for propelling vessels, Mr. F. Neale, Gloucester.

———Improvements in paddles, Mr. A. Robertson, Liverpool.

———Improvements upon paddle wheels, Mr. W. E. Cockrane, Regent Street.

STEEL—New method of making, C. Sanderson, Park-Gate Iron Works, Rotherham.

STOP COCKS—An improved cock or tap for drawing off liquids, Mr. J. M. Ross, Symonds Inn.

STREET WAYS—An improved process of constructing street-ways, Messrs. J. Rowland and C. M'Millars, Heneage Street, Brook Lane, Spitalfields.

SUGAR REFINING—Improved method of expelling the molasses from sugar, Mr. J. Hague, Cable Street, Wellclose Square.

———Improvements in the condensing apparatus used for boiling sugar in vacuo, Mr. J. Davis, Leman Street.

SURVEYING—Improvements on machines or apparatus for measuring land, and other purposes, Mr. J. Chesterman, Sheffield.

SWEEPING MACHINES—Improved machines for sweeping, scraping, and watering roads, &c. John Boase, Albany Street, and Thomas Smith, Augustus Street, Regent's Park.

TABLE FORKS—Improvements in, Messrs. G. Rodgers, J. C. Hobson, and J. Brownill, Sheffield.

TILES—Improvements in tiles for houses and other buildings, F. H. N. Drake, Esq. of Colyton House, Devon.

"TILL"—For "being in possession of the process for the invention of a peculiar till," Francis Horatio Nelson Drake, Esq. Colyton House, Devon.

TIME KEEPERS—Certain improvements in watches and time-keepers, Mr. T. Westwood, Princes Street, Leicester Square.

WAREHOUSES—Improvements in the construction of warehouses, and similar buildings, H. R. Palmer, Esq. London Docks.

WASHING, DYEING, and CALENDERING—Improved machinery to facilitate various operations connected with, Mr. J. Rayner, King Square.

WATER CLOSETS—Improvements in the construction of, Mr. H. Tyler, Warwick Lane.
WATCHES—Certain improvements applicable to, Mr. I. Brown, Gloucester Street, Clerkenwell.
WHITENING SUGARS—A new process of, Mr. J. Bates, Bishopsgate Street Within.
WINDMILLS—Improvements in the construction of, Mr. J. C. Hewes, Manchester.
WOOLLEN CLOTH—Improved machinery for raising and finishing, Messrs. J. and J. Charlesworth, and S. A. Mellor, Holmfirth.
———————Improvements in machinery for dressing, Mr. J. Jones, Leeds.
———————An apparatus applicable to dressing woollen cloth, Mr. S. Walker, Buston, Leeds.
WORKING HORN—Methods of making various articles from horn and hoofs of animals, Messrs. J. and T. Deakin, Sheffield.

XXXVI.—CHRONICLE OF EVENTS.

From DECEMBER 1828, to NOVEMBER 1829.

December, 1828.

29. Destructive fire at George Town, Demerara; the loss estimated at 200,000*l*.
30. The Marquis of Anglesey recalled from the Lord Lieutenancy of Ireland.
31. The Bosphorus declared in a state of blockade by the Russian Admiral, Greig.

January, 1829.

2. Forty men and thirty horses destroyed by an explosion of fire-damp in a mine near Lyons.
3. Six hundred Portuguese emigrant troops embarked from Plymouth under Count Saldanha, for Terceira.
12. Termination of the fatal epidemic fever at Gibraltar announced by the Governor.
16. The vessels with the Portuguese emigrants on board fired into, and the emigrants prevented from landing at Terceira, by Captain Walpole of the Ranger.
17. Regulations issued from the Colonial Office for the new settlement on Swan River, and Capt. Stirling appointed Lieutenant Governor.
22. The Duke of Northumberland nominated Lord Lieutenant of Ireland.
26. Considerable damage done to the shipping in the Thames, on the breaking up of the frost, by the floating ice.
27. Death of Mr. Shield, the celebrated composer.
The session of the Legislative Chambers opened at Paris.
28. Public meeting at Liverpool, and resolutions passed against the East India Company monopoly.
29. Death of Barras, Chief of the Executive Directory during the French revolutionary government.

February.

1. The German diet resumed its sittings.
The Black Joke, of two guns and 55 men, tender to the Sybille, captured the Almirante Spanish slave vessel, of 14 guns and 80 men, with 466 slaves on board, after a severe action.

2. York Minster set on fire by Jonathan Martin, a lunatic. The roof of the choir and its internal fittings were destroyed.

3. Meeting of the Spitalfields silk weavers at Bethnal Green, to memorialize the Duke of Wellington on their extreme distress.

4. Mr. Peel resigns the representation of Oxford university, in consequence of his determination to introduce measures for the relief of the Roman Catholics.

Redschid Pasha, distinguished as the captor of Missolonghi and the Acropolis, and as suppressor of the insurrection of the celebrated Ali Pasha, appointed Grand Vizier by the Sultan in the place of Izzet Mehemet.

5. Opening of the session of the British parliament, for the proceedings of which *see* Chronicle of the Session.

9. Riot at Nantwich, in consequence of a mob rescuing twenty-five poachers from the round-house; the military called out to recapture them, and restore the peace.

10. Death of Pope Leo XII. he having occupied St. Peter's chair from September, 1823.

12. The Catholic Association vote their own dissolution.

In consequence of a quarrel between the suite of M. Gribojedoff, minister of Russia at the court of Persia, and the populace of Teheran, the whole of the embassy were murdered, with the exception of M. Matzoff, secretary of the legation, and three others.

16. Andrew Jackson declared duly elected President of the United States, by the Congress.

20. Petitions from the proprietors of vineyards in France to the Chambers, complaining of their extreme distress occasioned by the existing taxes on wine.

The squadron fitted out by Don Miguel for the reduction of Terceira sailed from Lisbon.

24. Decree issued by the King of Spain constituting Cadiz a free port.

25. Annual meeting of the proprietors of the London University. The report stated that the receipts in the year amounted to 59,803*l.* 12*s.*; the expenditure to 47,568*l.* 14*s.* 3*d.*; leaving in hand 12,234*l.* 17*s.* 9*d.* The donations in the year amounted to 792*l.* and the receipts from students 1,902*l.* 5*s.* 10*d.* The current expenses were calculated at 5500*l.*

Accounts received at the Stock Exchange of numerous failures at Glasgow, amounting to 200,000*l.*; making in the whole, since the preceding autumn, at least 1,000,000*l.* in that town only; these failures were chiefly confined to different branches of the cotton trade.

The Earl of Dalhousie appointed Commander-in Chief of the Company's forces in India.

Violent hurricane at the Isle of Bourbon, by which upwards of sixty vessels were damaged, and the whole of the eastern side of the island devastated.

27. General Diebitsch assumes the command of the Russian army against the Turks.

28. Oxford election closed, when Sir Robert Inglis was returned.

March.

1. Treaty of Peace concluded between the republics of Colombia and Peru.

4. Inaugural address of President Jackson, declaring his deference to the laws, his attention to economy, and his determination to reduce the public debt, conceiving it to be injurious to the morals of the state; also his intention not to increase the army, but to trust the defence of the Union to its naval force, forts, &c.

Meeting at York for the purpose of raising subscriptions to defray the expense of restoring York cathedral; the estimate submitted by Mr. Smirke amounted to 60,000*l.*

4. Numerous petitions presented to the second Chamber of Deputies of the Netherlands, praying for the institution of Juries, the independence of judges, the responsibility of ministers, and the freedom of public instruction; and a motion to refer these petitions to the government, carried against the ministry by a considerable majority.

8. A decree passed by the senate of Mexico, for the expulsion of Spaniards from that country.

15. Victory obtained by Count Paskevitsch over the Turks under Kayan Oglou, near Kintrishi, in the province of Erivan.

20. Sizepoli, a port on the Black Sea, taken by the Russians from the Turks.

21. Duel between the Duke of Wellington and the Earl of Winchilsea.

Earthquake in the province of Murcia in Spain, by which four towns and several villages were entirely destroyed. The number of lives lost estimated at six thousand.

31. Cardinal Castiglioni, aged 68, elected Pope, and assumed the name of Pius VIII.

April.

1. Accident at Hyde, near Manchester. A meeting of workmen being assembled in a room at a public house, the flooring suddenly gave way, and 250 people fell with such force as to go through the floor beneath them, into the cellar; thirty were killed, and many others greatly wounded.

9. Inundation at Dantzic, occasioned by the Vistula breaking through some of its dikes, by which ten thousand head of cattle and four thousand houses were destroyed, and numerous lives lost.

10. Catholic Relief Bill carried in the House of Lords by a majority of 213 to 109.

The Lafayette theatre at New York destroyed by fire, together with several adjacent buildings.

13. At Nottingham part of the rock fell down and destroyed several houses.

The city of Guatimala taken by assault by the troops of San Salvador, under General Morazan, who assumed the government.

18. Part of the expedition against the island of Terceira sailed from Lisbon.

25. The Antwerp diligence, with sixteen passengers, thrown over one of the narrow bridges of the fortifications of that city into the ditch, and ten persons drowned.

27. Westminster Abbey discovered to be on fire, which was however extinguished without occasioning any serious injury to the building.

28. Violent hurricane in London and its vicinity, by which much damage was done to the craft in the river Thames, and some lives lost.

The Duke of Norfolk and Lords Dormer and Clifford took their seats in the House of Lords, being the first Catholic peers under the Catholic Relief Act.

29. Disturbances among the manufacturers of Rochdale, Macclesfield, Stockport, and other places, occasioned by distress; many factories and much machinery destroyed, and the military called out to restore and preserve order in these districts.

May.

2. Concert at Guildhall for the benefit of the distressed silk manufacturers of Spitalfields.

3. Riots at Manchester; a factory burnt, and a great quantity of machinery destroyed.

4. The Earl of Surrey elected member of parliament for Horsham, being the first Catholic member returned to the House of Commons under the new act.

5. Disturbances among the silk-manufacturers of Spitalfields, and a system commenced of cutting, in the looms, the goods belonging to employers refusing to pay the rate of wages demanded by the associated workmen.

5. At a meeting of the Middlesex magistrates, 123,730*l*. was voted to the Committee for erecting a Pauper Lunatic Asylum.

6. The French Chamber of Deputies order M. de Peyronnet, late Keeper of the Seals, to be sued for the sum of nearly 8000*l*. sterling, expended by him in furnishing and enlarging his official residence without the previous consent of the legislature.

7. The Congress of Peru refuse to ratify the treaty concluded with Colombia, and hostilities re-commenced.

8. A new tariff for the regulation of duties on commerce established by the republic of Colombia.

Death of the Right Hon. Charles Abbott, Lord Colchester, aged 72, who filled the office of Speaker of the House of Commons from 1802 to 1817.

9. The town and citadel of Lepanto taken by the Greeks.

Deputations from Liverpool, Glasgow, Manchester, Bristol, and Birmingham, have an interview with the Duke of Wellington and other ministers, for the purpose of advocating a free trade to India and China.

15. An interview between the leading members of the East and West India trade and the Chancellor of the Exchequer, on the subject of the sugar duties. It was understood that early in the session of 1830 the whole question would be brought before parliament in order to its final adjustment.

16. At a meeting of the subscribers and donors to the King's College, London, held at the Freemason's Tavern, Lord Bexley announced that the government had given the ground originally intended for the east wing of Somerset House, for the purposes of the institution, free of expense for 1000 years, on condition that the new erection corresponded with the rest of the edifice.

17. Death of the Queen of Spain; she was a princess of the House of Saxony, and third wife of Ferdinand VII.

The siege of Silistria commenced by the Russians.

Missolonghi surrendered to the Greeks by capitulation.

Action near Pravadi between the Turks and Russians.

20. The session of the States-General of the Netherlands closed.

23. Departure of Captain Ross from Woolwich, in the steam-vessel the Victory, in order once more to attempt the discovery of the north-west passage.

At the University of London a meeting was held for the distribution of prizes and honours in the medical classes, for which there were sixty-five competitors, of whom fifty-two were declared successful.

27. The Royal Bazaar and British Diorama, in Oxford-street, destroyed by fire, which broke out in the afternoon while attended by company; the damage estimated at 50,000*l*.

29. Death of Sir Humphry Davy, in the 51st year of his age.

June.

9. The town of Rashova, on the right bank of the Danube, taken by the Russians.

10. At a Court held by his Majesty, Lord Wynford (late Chief Justice Best) was presented on his elevation to the peerage; Sir N. Tindal on his promotion to the Bench as Chief Justice of the Common Pleas; Sir James Scarlet and Mr. Sugden (the latter of whom was knighted) on their appointments as Attorney and Solicitor General; and at a Privy Council afterwards held, the Earl of Rosslyn was sworn in Keeper of the Privy Seal.

At the Navy-yard of New York, the Fulton American steam-vessel destroyed by the explosion of the powder on board; 22 persons were killed, and many others wounded.

11. Victory obtained by the Russians over the Turks at Kulertscha, near Shumla.

15. An edict issued by the Pope renewing the ordinances which proscribe secret societies.

18. Surrender of Silistria to the Russians; the garrison of 8000 men, and 10,000 armed inhabitants, to be prisoners of war.

20. The Ambassadors of England and France arrive at Constantinople.

23. The Count de Villa Flor assumes the command of the garrison of Terceira, on behalf of the Queen of Portugal.

24. The Session of Parliament closed. *See* Chronicle of the Session.

25. The civil war which had for some time desolated Buenos Ayres terminated by a treaty between the leaders of the rival factions, Don Juan Lavalle, and Don Juan Manuel Rosas; Lavalle continuing at the head of the government.

30. Meeting of the subscribers to the Thames Tunnel, to receive the report of the Directors respecting a new plan of working the excavation at a greatly reduced expense, proposed by Mr. Vignoles; and a resolution agreed to that the Directors be empowered to adopt any mode of carrying on the work likely to ensure its completion.

July.

2. The camp of Hagki Pasha, near Milliduse, on the road to Erzeroum, attacked by General Paskevitsch, and 30 pieces of cannon, 19 standards, and 1500 prisoners, including the Pasha himself, taken by the Russians, who had, two days previous, attacked and routed another Turkish army commanded by the Seraskier of Erzeroum.

5. The Carn Brea Castle, East Indiaman, on her voyage out, run aground at the back of the Isle of Wight, and totally wrecked; all the passengers and much of the cargo saved.

The Spanish expedition against Mexico, consisting of about 5600 men, sailed from the Havannah.

9. Distribution of prizes among the pupils of the London University of the general classes, *i. e.* those of Mathematics, English Literature, Greek, Latin, Natural Philosophy, and English Law.

Erzeroum, the capital of Anatolia, surrendered to the Russians.

11. Violent storm and flood at Leeds and Halifax, doing much damage, particularly to the crops in these neighbourhoods.

13. Grand audience given by the Sultan to the British Ambassador in the Turkish camp on the plain of Buyukdere.

14. A man of the name of Stewart, and his wife, convicted at Glasgow of the murder of Robert Lamont, by administering laudanum in his drink on board a steam packet, and afterwards robbing him; they were subsequently executed, and it was ascertained that they had been repeatedly guilty of similar crimes.

18. New arrangements adopted by the post-office at Paris in order to facilitate the transmission of letters to England.

23. The Greek National Assembly commence their sittings at Argos.

26. One thousand houses destroyed by fire at Pera, a suburb of Constantinople.

The passage of the Balkan mountains completed by the Russian army.

28. Mr. Gurney's steam-carriage, on its experimental journey to Bath, attacked by a mob at Melksham, and the engineers and passengers wounded by stones being thrown at them.

30. The rail-way tunnel under the town of Liverpool, from the back of Edge-hill to Wapping, being a mile and a quarter in length, opened to the public.

Mr. O'Connell re-elected for Clare without opposition.

31. The sitting of the French Chambers closed.

August.

2. Marriage by proxy of the Emperor of Brazil to the Princess Amelia of Leuchtenberg, daughter of the late Prince Eugene Beauharnois.

4. Tampico in Mexico, taken by the Spanish expedition from the Havannah.

Total change of the French Ministry; Prince de Polignac, M. de Bour-

mount, and M. de la Bourdonnaye, being appointed to the principal offices.

Violent storms and heavy floods in several districts of Scotland early in this month, particularly in the neighbourhoods of Aberdeen and Kelso.

11. The Portuguese expedition attack Terceira, and are repulsed and defeated with the loss of 1200 men killed, wounded, and prisoners.

13. Great damage done to the shipping in the neighbourhood of Dublin by a violent storm.

19. Order issued by the Lord Mayor to regulate the speed of steam-vessels in the Thames above Greenwich, which is directed to be at different rates, according to the state of the tide, but in no case to exceed six miles an hour.

A motion made in the Swedish Chamber of Nobles (two days before the coronation of the Queen,) that the Queen be requested to embrace the Lutheran religion, negatived by acclamation, on the ground that the religion of the Queen could never interrupt the religious peace of the nation.

20. Adrianople entered by the Russian army.

26. A Court-martial commences its sittings at Portsmouth, to inquire into the alleged misconduct of Captain Dickinson at Navarino.

27. The newly-espoused Empress of Brazil arrives at Portsmouth from Ostend, for the purpose of embarking on board a Portuguese frigate for Brazil, accompanied by the young Queen of Portugal.

29. An armistice concluded between the Turks and Russians.

September.

4. Riots at Barnsley, (Yorkshire,) and the surrounding districts, in which considerable damage was done.

9. A public meeting of the performers, creditors, and friends of Covent Garden Theatre, to consider of the best means of preventing the sale of the property under an execution for parochial rates, and of enabling the theatre to open again at the proper season, at which, after some discussion, a subscription was resolved upon.

10. A steam-boat named the Monster, 250 feet in length, left the Hague on its first voyage, for the purpose of ascertaining its powers. It had been built at an expense of 100,000*l*., with the object of facilitating the communication with Batavia.

14. Treaty of peace signed between Russia and Turkey at Adrianople.

17. Captain Dickinson honourably acquitted by the Court-martial at Portsmouth.

23. The New Post Office opened, and new arrangements adopted for facilitating the delivering and receiving of letters, &c.

24. The will of W. Hunt, Esq. proved at Doctors' Commons, by which he bequeathed property estimated at 200,000*l*., for the purpose of increasing the accommodations of Guy's Hospital.

October.

6. Meeting at Newark in consequence of the proceedings taken by the Duke of Newcastle against many of his tenantry in that town.

Competition for several days at the Liverpool and Manchester rail-road, at a place called Kenrick's Cross, between several differently constructed locomotive carriages, in order to ascertain the respective speed and power of each; two of them were propelled at a rate of upwards of thirty miles an hour. A prize of 500*l*., given by the directors of the rail-road company, was finally awarded to Mr. Stephenson.

16. The Dolphin convict hulk, with two hundred convicts on board, sunk suddenly in the Thames, but only three lives were lost.

THE END.

London: Printed by W. Clowes, Stamford Street.